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ASSISTANT MEDICAL OFFICER, MAUDSLEY HOSPITAL; CLINICAL ASSISTANT TO THE DEPARTMENT FOR NERVOUS AND MENTAL DISORDERS, ST. GEORGE'S HOSPITAL, LONDON

In the course of practice in a psychiatric out-patient department, it is hard to avoid the suspicion that the terms and concepts in common use in psychiatry, have not gained a general acceptance amongst those engaged in a wider or a different field. This general impression prompted an inquiry into what physicians engaged in general medicine actually appeared to think or believe. For this purpose 150 physicians' letters accompanying cases referred by them to the out-patient department of the Maudsley Hospital, together with the records of these cases, were examined. It was hoped that thereby some insight might be gained into the difficulties most prevalent at the present time, and that this would not be without relevance as to what was most needed in psychiatric education. For convenience it was assumed that the observations and conclusions of the out-patient physicians at the Maudsley were correct.

The *material* may be summarised as follows:—

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Suicide.—Perhaps the most urgent practical problem in psychiatry is that of the potential suicide. According to the official statistics, which for various reasons are certainly an under-estimate, there were 5657 successful suicides in England and Wales in 1932 and 3299 cases of attempted suicide. It is not contended that even the most skilled psychiatry could reduce the incidence of suicide to vanishing point, but there can be little doubt that, if greater knowledge and facilities were available, it would be materially lessened.

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THE INVESTIGATION REVIEWED

One of the most impressive features of this small investigation was the evidence provided of the care and interest of the physicians who sent up the cases. There was also, very frequently, evidence that so far as ordinary human understanding of personal difficulties or unhappiness will allow, many at least of the factors responsible for the condition of the patients had been well and clearly grasped. Indeed, the trouble taken and understanding displayed can be legitimately described as quite out of the ordinary. If this were the beginning and end of psychiatry, there would be relatively little cause for uneasiness. It can, however, be claimed that modern psychiatry has at its disposal a body of knowledge which goes beyond that usually possessed by an educated and sensitive person interested in human problems. Unfortunately this body of knowledge does not appear to be always shared by the general practitioners of medicine at the present time.

Terminology.—One of the most striking features which emerged was the very extensive use made of lay terms, such as nervous breakdown, mental instability, and nervous prostration. Even diagnoses which carry more precise meanings, as for example, anxiety neurosis and psychasthenia, appeared often to be used in a very general sense to label a wide variety of conditions; whilst other descriptive terms, such as confusion and delusion, were not always employed with due regard to their psychiatric connotations. The term confusion was particularly noteworthy in this respect, being applied almost indiscriminately to any patient who did not respond briskly and appositely. The same was true of "memory failure." Ideas of reference were called hallucinations on more than one occasion.

Psychiatry is sometimes reproached for being a matter of words. Difficulties in understanding psychiatric terminology arise partly from the fact that certain of the words employed, such as obsession, are also used by the lay public in a loose and indeterminate manner; and partly because the same term (e.g., depression) may be used in two different connexions and for two separate purposes, either in a purely descriptive sense, or as a diagnosis and classification. In attempting to avoid these difficulties and resultant confusions, it lays itself open to the reproach of employing an outlandish terminology, about which there is alleged to be no general agreement amongst psychiatrists themselves. From this it is falsely inferred that there can be but a small body of knowledge which all can accept as a common basis; and this sometimes leads to the dubious assumption that anyone can think what he pleases.

In the "organic" disorders a fairly well-defined physical pathology has allowed a classification on ætiological principles analogous to that which is employed in general medicine. But in the immense group of the "functional" disorders of the mind, there is no such pathology to help us, nor in the opinion of certain authorities will there ever be. Classification is therefore at present based upon the separation of clinical syndromes or "reaction types." In such a classification, an individual case may well

be on the boundary between two well-defined types of reaction, combining the clinical features of both.

Misconceptions and Difficulties.—In the present state of knowledge it cannot be assumed that a knowledge of the psychological factors producing a reaction—however detailed the knowledge may be—will by itself enable us to predict the course that reaction will take. If one may draw a deduction from the letters we have analysed, the idea that psychogenic factors are of predominant diagnostic and prognostic importance, is very prevalent. Much emphasis was laid on the psychogenic factors; little emphasis, and certainly less understanding, was attached to the significance of the state that was produced. Yet from a clinical point of view, and in facing of immediate practical problems, the latter is often the more helpful. For example, from the standpoint of what can reasonably be expected from the general practitioner, the same psychogenic factor, such as a mother's death, may in different cases give rise to an acute depressive psychosis or to a conversion hysteria; but the situation, and the treatment required, are quite different in the two cases. In solving these and kindred problems, no amount of reading or attendance at lectures can compensate for the lack of clinical experience. Books about dreams, or the conviction that these disorders are rooted in a failure of libidinal development, are, for example, of very limited value in the diagnosis of the schizophrenias.

It is not surprising that when difficulty was experienced in assessing the significance of the more common clinical types of reaction, the sources of special difficulty to the psychiatrist himself proved bewildering to the general physician. The ways in which mental defect, or abnormal or psychopathic personality, may influence the symptomatology of mental disorder were not understood at all. It was more surprising that the mental symptoms typically associated with gross physical disorder or disease were so little known.

Another interesting and frequent source of confusion arose in connexion with the so-called borderland case or "early psychosis." We could only infer that it is a common belief that mental disease shows an insidious progression in the severity of the mental illness with the passage of time—with the corollary that mildness in form coincides with recency in onset. Then, leaving out the time factor and paying attention solely to the severity of the symptoms, it appeared to be held that cases in which the severity of the symptoms was not so great as to be socially incapacitating, were "early"; and that the "milder" and "earlier" the case (the two conceptions being identified) the more amenable it was to treatment, and the better were the chances of recovery. The point did not seem to have been grasped that "mildness" of form, in the sense of the absence of symptoms of the type which lay people commonly call mental, is per se a poor guide to chances of recovery or possibilities of modification by psychotherapeutic or other means. Should rules of thumb be sought, recency of onset, regardless of severity of form, is a much better criterion. For example, the chronic alcoholic, or the schizophrenic with a clear history of definite symptoms dating back for ten years, who can yet live outside an institution, are in no intelligible sense "early mental cases," and for them, often relatively little can be done; whereas acute mania of recent onset is an eminently recoverable condition.

It was evident that psychotherapy is widely believed to be the only method of treatment at the disposal of the psychiatrist, and by psychotherapy was meant something closely analogous to an "analytical" procedure. That there are other possible modifying influences for good, more suitable for many conditions, appears seldom to have been recognised. (If it were not so, the treatment of mental disorder would be disheartening indeed.) There seemed, moreover, to be a general impression that if the dynamic factors productive of the particular reaction could be readily understood—if the reaction appeared comprehensible, and not greatly different from what anyone might show in the same circumstances—then psychotherapy could and should be applied with beneficial results. But many depressive reactions are quite mild in form and recent in onset, often particularly "comprehensible" and eminently recoverable. They therefore answer all the criteria of the "early" case for which psychotherapy is apparently held to be of especial service. Yet few psychiatrists would counsel intensive psychotherapy in these cases; though of course, this is far from saying that a great deal cannot be accomplished by other means.

It was interesting to observe that the physicians who sent up these cases very frequently gave predominant importance to the sexual life and sexual conflicts in the production of mental disorder. On occasion, indeed, an importance was attached to sexual difficulties which could not be accepted by the psychiatrists. It is not always justifiable to infer from the discovery of a sexual abnormality or preoccupation that the mental state of its possessor can be attributed to this cause.

But certainly the most prevalent (and disputable) notion is that, as regards suitability for psychotherapeutic treatment, there is a very high degree of correlation between the capacity to understand a reaction, and the power to control it.

THE CLAIMS OF CLINICAL PSYCHIATRY

It appears to us that the varying and sometimes conflicting tenets of the "seven and twenty jarring sects of psychotherapists" has obscured that real body of solid knowledge which clinical psychiatry has to offer; for modern psychiatry is not completely synonymous with the psychopathological theories of Freud, Adler, and Jung, let alone that eclectic synthesis achieved of their often divergent views by possessors of open, indeed very hospitable, minds. There is in fact a common body of knowledge, a common agreement upon the meaning to be assigned to certain terms, and a wide consensus of opinion as to the practical value of certain concepts and clinical differentiations, to be found at the better centres in America and Germany to-day. This fact is not widely known in Great Britain, and may account for a psychiatric scepticism which is not justified. To obtain a working knowledge of clinical psychiatry is not overwhelmingly difficult; it has the greatest practical value, and it does not appear to be widespread at the present moment.

There are some who perhaps feel that psychological medicine offers more an attitude of mind, or method of approach, rather than an accepted body of knowledge; something very desirable to acquire, but obviously very difficult to teach. The claims, however, can be put higher. Clinical psychiatry has something definite to offer which goes beyond sympathetic goodwill and the realisation that patients are human beings. The impression gained in our inquiry makes us hope, moreover, that in the recognition of psychological medicine in the medical curriculum clinical psychiatry will receive the first consideration

and theoretical lectures, especially on speculative psychopathology, will take a second place.

SUMMARY

An examination of 150 practitioners' letters referring cases to the out-patient department of the Maudsley Hospital shows that great pains are taken with these cases and that there is much intelligent and sensitive understanding of difficult situations and unhappy lives. But the knowledge of clinical psychiatry which they display is far less satisfactory. A common misconception appears to be that psychogenic factors are of predominant diagnostic and prognostic importance, which is only true to a limited extent. It is also widely held that relative mildness of symptoms makes a case "early" however long the symptoms have lasted. Intensive psychotherapy of a type approximating to a true Freudian analysis is widely assumed to be the only form of treatment at the disposal of the psychiatrist; and it is believed that if a mental reaction can be "understood" it can therefore be modified or controlled. We suggest that a greater knowledge of clinical psychiatry is a pressing need at the present time; that this is not synonymous with a knowledge of various more or less speculative theories; and that the conflicting tenets of rival schools of psychopathology must not be allowed to obscure the basis of knowledge which all can accept as a point of departure.

Our thanks are due to Dr. E. Mapother, the medical superintendent of the Maudsley Hospital, for his permission to have access to the records of the hospital.

DIAGNOSIS OF VITAMIN-C SUBNUTRITION BY URINE ANALYSIS

WITH A NOTE ON THE ANTISCORBUTIC VALUE OF HUMAN MILK

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PREVIOUS papers from the Nutritional Laboratory [1] have described a method for estimating vitamin C in animal tissues, depending on titration against the "redox" dye, 2,6-dichlorophenolindophenol, introduced by Tillmans.[2] The use of this method led to the discovery that the vitamin was present in high concentrations in a number of unsuspected sites in the animal body,[3 4] including, for example, both the medulla and the cortex of the suprarenal gland,[5 6] the lens of the eye and the aqueous [7] and vitreous [8] humours, and the wall of the gut.[9] Applying the method to urine, we found [10] that normal human subjects excreted significant amounts of the vitamin in their urine. The output in the urine varied with the dietary intake in a rather peculiar manner. Normal well-nourished human subjects were found to behave as though they had appreciable reserve "stores" of the vitamin, for when the vitamin was temporarily withheld from their diet they continued to excrete it for a time at almost steady rate. When, on the other hand, a large dose of the vitamin was administered to such an individual, his apparently well-filled "reserves" permitted him, as it were, to dispense with some of the surplus and excrete it into his urine, with the result that a sharp peak was seen in the curve of his urinary response. In other words, we found that the urinary output depended both on the immediate vitamin intake and also on the past nutritional history—or on the state of vitamin "saturation" as later writers have expressed it.[11 12 13] These observations prompted us to suggest [10] that this titration technique should have applications as a diagnostic test, for detecting states of vitamin-C subnutrition in human beings; and we gave details of a number of experimental conditions which would have to be complied with for the test to be reliable—e.g., the need for controlling the dietary intake during the short period of the test. We have since had some further encouraging experiences in the application of this test, and in view of the current interest of clinical and other workers, are taking the opportunity to publish a brief summary of our more recent results, which we hope to include in greater detail in the course of a later more comprehensive survey.

Van der Walle [14] reported in 1922 that he had been unable to detect vitamin C in human urine by biological tests; but we believe the explanation to be that he did not feed a sufficiently large dose to his guinea pigs to give protection, and, further, that the urine was not fed soon enough after it had been passed to guard against inactivation of the vitamin. The titration method introduced by us has since been applied to urine analysis also by Eekelen and his co-workers,[15] who independently showed that the reducing titre was higher in the urine of persons who had eaten more fruit; and more recently also by Hess and Benjamin [12] and by Johnson and Zilva.[13] The range of "normal values" determined by Eekelen and his collaborators [11] is in excellent confirmation of our own, and seems to be confirmed further also by the results of Johnson and Zilva. Hess and Benjamin, on the other hand, have concluded that "under ordinary dietary conditions the amount of vitamin C present in human urine is so small as to be considered entirely negligible." Their conclusion is certainly not in accord with our own finding that average adults in this country fed on normal diets excrete in their urine every day rather more vitamin C than the reputed "minimal dose" needed to protect against scurvy, or with the closely similar findings of Eekelen for adults on "average" diets in Holland. Hess and Benjamin give values (for children) which are consistently about ten times lower than those which we now report. According to our own figures the excretion of vitamin C by well-fed children is of the same order when expressed on a body-weight basis as for adults. It has also been suggested [13] that infants are able to synthesise vitamin C, but the only evidence advanced for this view is that they continue to excrete it in the urine when it is withheld for 48 hours from the diet. As our earlier work indicated, the true explanation no doubt is that it is the body's normal stores which are being excreted under these circumstances. In recent papers, both Eekelen [16a] and Zilva [13] have, in fact, confirmed the presence of vitamin C in urine by means of biological tests.

Titration technique.—The vitamin-C content of urine can be determined by the titration method with considerable ease and accuracy. But since the concentration present is always relatively small, a microchemical method has to be used, and it is necessary to follow accurately the technique described. Failure to do so may lead to misleading conclusions. We therefore think it advisable to append full working details of the method. By its use reproducible and rapid results are readily obtained.

The urine should be titrated immediately it is passed, or if this is impracticable 10 per cent. by volume of glacial acetic acid may be added as preservative. Under such conditions the vitamin C in the urine may be preserved for about 10 or 12 hours with relatively little loss. (Glacial acetic acid seems to give better results as a

preservative than trichloracetic acid, which we used for extraction in our process for animal *tissues*.)

Results are given in terms of daily output of vitamin C, and must be based on determinations covering a period of at least 24-36 hours. Determinations of concentration on isolated specimens are of relatively little significance.

The principle of the titration is to take a measured amount of recently standardised dye (2,6-dichlorophenol-indophenol) and determine the amount of urine which has to be added to it to discharge its colour, the titration being carried out rapidly and in solution made acid by the addition of 10 per cent. by volume of glacial acetic acid. The dye is made up in watery solution, at a strength of about 0·05 per cent., so that 0·05 c.cm. is equivalent to roughly 0·025 mg. of ascorbic acid.

In carrying out the titration a 2 c.cm. micro-burette reading to the nearest 0·01 c.cm. is used. The urine is placed direct in the burette if it is clear; if not it is filtered, after the addition of 10 per cent. by volume of glacial acetic acid (if not previously added as preservative). Whenever acid is added to the urine in this way the necessary correction for dilution must of course be made in the final calculation.

The titration is conveniently carried out in a pointed centrifuge tube. The dye solution must be measured out accurately from a micro-pipette. The amount to be taken varies somewhat according to the concentration of the vitamin C in the specimen of urine under examination. For most ordinary specimens of adult urine 0·05 c.cm. of the dye solution is found to be a suitable amount, while for most infants' urines 0·025 c.cm. is more suitable. In all cases the amount of dye taken should be such as to need between 1 and 2 c.cm. of urine in the titration. If the concentration of vitamin C in the urine is so low that 0·05 or 0·025 c.cm. of dye give no end-point under the 2 c.cm., the titration is considered negative, or, better, a still smaller volume of the dye solution is taken—viz., 0·01 c.cm.—when an approximate measure of the concentration can still generally be obtained. If, on the other hand, the concentration of vitamin C in the urine is so unusually high (as after a test dose) that less than 0·5 c.cm. is needed to discharge the dye, the urine is diluted further with a known volume of water and glacial acetic acid before titration. If no acid has previously been added to the urine, about two drops of glacial acetic acid are added to the indicator in the tube before the titration is begun, so that in all cases the final concentration of acetic acid is always kept round 10 per cent. In carrying out the titration, the end-point is best found by matching with a second control tube containing urine diluted to the same extent but without dye. The titration must be carried out rapidly, the end-point being reached within two minutes. Substances other than vitamin C may reduce the dye relatively slowly.

As to the specificity of the titration method,[3 4] little need be added here. The virtual disappearance of the titre in scurvy, and its restoration when vitamin C is fed, and the proportionality between the titre and the amount of the vitamin C in the diet, all argue for the accuracy of the method. Provided the titration is carried out rapidly, according to specification, no known constituent of urine is likely to interfere. (Cystein and ergothionine, alone among well-recognised substances of biological interest, are liable to simulate vitamin C under the conditions of our test, although they reduce the dye more slowly—and these substances may readily be separated from the vitamin by precipitation with mercuric acetate * before titration, when one is dealing with such tissues as are liable to contain them,[17] or alternatively the cystein can be estimated differentially.[18])

Results

Through the valued coöperation of Prof. Leonard Parsons of the Birmingham Children's Hospital, and Dr. Eric Pritchard of The Infants Hospital, Vincent-square, we have been able to examine a number of infants suffering from manifest scurvy, together with others with a history of vitamin-C underfeeding, suggestive of probable latent- or sub-scurvy. We have also made tests on a number of other subjects in varying age-groups.

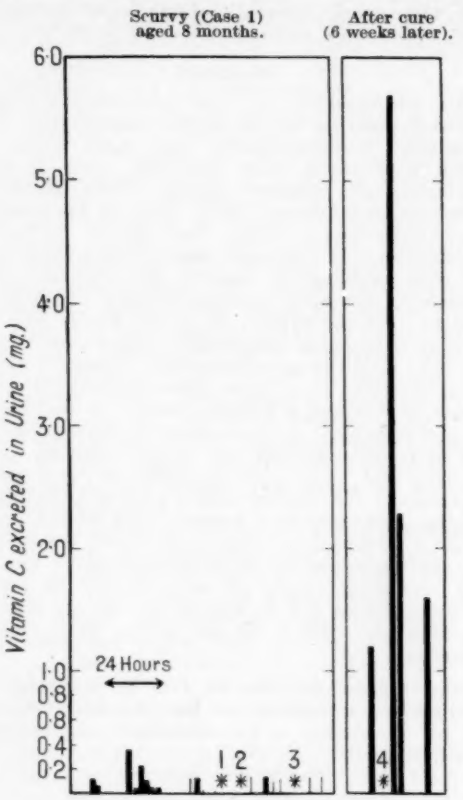

FIG. 1.—Chart showing the excretion, hour by hour, of vitamin C by a scorbutic infant before and after cure, and the effect of the test doses. At the points indicated by asterisks various doses of ascorbic acid were given (1+2=85 mg.; 3=170 mg.; and 4=100 mg.). The heights of the columns represent the amount of vitamin C excreted in each specimen of urine. It will be seen that the scorbutic child excretes little vitamin C, but the difference is more obvious when the effects of test doses, before and after cure, are compared. (The linear columns represent limiting values where the concentration is too low to be determined precisely, the amount of vitamin C being definitely *less* than is indicated by the height.)

INFANT SCURVY

The first set of observations (plotted in Fig. 1, and included in the summary in Table I.) shows that an infant suffering from scurvy excreted a smaller amount of vitamin C than a normal well-nourished child of the same age. After cure the same infant was excreting vitamin C at a full normal rate. To obtain a better indication of the state of vitamin saturation or unsaturation, large test doses of vitamin C were given to the infant both during scurvy and after cure. It will be seen (Fig. 1 and Table II.) that during scurvy the repeated administration of large test doses of vitamin C failed to bring about the urinary response characteristic of normal subjects. In other words, owing to the state of vitamin unsaturation practically all the vitamin given to the infant was avidly taken up by the depleted tissues, so that none appeared in the urine. In striking contrast, after cure—the tissues now being saturated—test dosing with the vitamin led to a most pronounced peak in the urinary curve (Fig. 1 and Table II.).

* Eckelen (Nature, Jan. 5th, 1935, p. 37) suggests that mercuric acetate may similarly be used to separate thiosulphate, which may be present in appreciable amounts in diabetic urine and may also interfere. Its use was not found necessary in our tests.

Parallel results, which need not be set out in detail, were obtained in a second case of scurvy (Case 3, Fig. 2, and Table I.).

In a third case of scurvy the full daily output of vitamin C was not at first accurately determined, but if it be calculated approximately from the average figures for the known concentration of vitamin C in the urine (determined over a period by Miss Eva L. Tonks, B.Sc.) and from the assumed daily volumes, it is seen to be as markedly subnormal as in the other cases of scurvy. Again after cure the daily output was determined and found now to be fully up to the normal standard for the age of the infant (Case 2, Table I.).

LATENT SCURVY OR HYPOVITAMINOSIS C

Cases of manifest scurvy are, of course, now relatively rare in this country, but it seems probable that partial vitamin-C deficiency is not uncommon ("sub-scurvy," "latent scurvy," or "hypovitaminosis C"). Many infants still receive insufficient fruit juice or, not uncommonly, none at all; while large numbers of children and adults (particularly among the economically depressed classes) probably consume sub-optimal amounts of vitamin C. It is in the possible application of our method to the detection of such cases of hypovitaminosis that we are therefore more especially interested. Results so far obtained seem to offer hope

TABLE I.—DAILY EXCRETION OF VITAMIN C IN URINE BY DEFICIENT AND NORMAL SUBJECTS

Patient's No.	Date in 1934.	Institution.	Age.	Diagnosis.	State of nutrition.	Past dietary history.*	Mean concentration of vitamin C in urine (calc. as bulked daily specimens), mg. per c.cm.	Daily output of vitamin C in urine (mg.).
				1. A- AND HYPO-VITAMINOUS SUBJECTS				
1	Sept. 13–16	B.	8 mos.	Scurvy.	—	Diet low in vitamin C.	0·014	0·7
							∧∧∧ 0·009	∧∧∧ 0·5
							∧∧∧ 0·007	∧∧∧ 0·4
							∧∧∧ 0·007	∧∧∧ 0·5
2	Oct. 11–18	B.	7 ,,	,,	—		0·005†	0·6 approx. (calc.)
3	Nov. 2	L.	7 ,,	,,	—		0·005	0·7
	,, 3						0·006	0·7
4	,, 3	L.	3½ ,,	Tracheitis.	Malnourished.		0·008	0·6
5	Oct. 27	B.	3 ,,	Pyloric stenosis.	,,		0·004	0·5
6	Nov. 3	L.	11 ,,	Marasmus.	,,		0·005	0·4
				2. SCURVY CASES AFTER CURE				
1	Oct. 26	B.	9 mos.	Scurvy cured.	Good.	—	0·01	2·4
2	,, 27	B.	8 ,,	,, ,,	,,	—	0·008	1·4
				3. CONTROLS (ARRANGED IN ORDER OF ASCENDING AGE)				
10	Oct. 27	B.	17 wks.	Pyloric stenosis.	Good.	Normal.‡	0·02	1·5
11	,, 26	B.	4½ mos.	Pulm. T.B.	,,	Normal.	0·008	1·1
12		B.	5 ,,	Broncho-pneumonia.	,,	,,	0·026†	
13	Sept. 14	B.	9 ,,	Nævus.	,,	,,	0·034†	
14		B.	9 ,,	Surgical.	,,	,,	0·012†	
15		B.	9 ,,	Diarrhœa.	,,	,,	0·015†	
16	Oct. 26	B.	10 ,,	Strang. ing. hernia.	,,	,,	0·007	1·5
17	Nov. 3	L.	1 yr. 1 mo.	Abcess in neck.	,,	,,	0·013	1·8
18		L.	3 yrs. 2 mos.	Osteomyelitis.	,,	,,	0·009	5·3
19		B.	5 yrs.	? Cœliac.	,,	,,	0·018†	
20		B.	7 ,,	? Sickle-cell anæmia.	,,	,,	0·01†	
21	Oct. 26	B.	8 ,,	Rheum. carditis.	,,	,,	0·020†	
22		B.	10 ,,	Debil., rheum.	,,	,,	0·040†	
23		B.	10 ,,	Nephritis.	,,	,,	0·013†	
24		B.	11 ,,	Cirrhosis of liver.	,,	,,	0·028	
	1933–1934 Normal adults (av.)	C.	(See Table III.)				0·02–0·03	15–30

Institution.—B. = Birmingham Children's Hospital. C. = Cambridge Nutritional Laboratory. L. = The Infants Hospital, London.
* For details of diet see protocols appended.
† These values are based on specimens covering less than the full 24 hours. ‡ Breast-fed.

DETAILS OF DIETARY HISTORY

Scorbutic infants.—No. 1 had had no orange juice from birth. (After three weeks on breast milk she had been given for the next three months a diet of "pearl" barley water and sugar with no milk, and then sterilised and boiled milk with the later addition of sugar, water, and rusks. On admission to hospital she was kept for one day on boiled milk, and then for another two days (while the urine tests were in progress) on autoclaved milk. For treatment 2 oz. of orange juice per day were given at first, and increased later to 3 oz. and then 4 oz.)

Scorbutic infant No. 2 had been fed on boiled cow's milk from birth and no orange juice. Treatment was as for No. 1.

Scorbutic infant No. 3 had received no orange juice from three months to seven months. For treatment we prescribed 25 mg. per day of synthetic ascorbic acid.

"Hypovitaminous" cases.—Infant No. 4 had received orange juice only very irregularly before admission to hospital, and none since admission, two months previously, the diet consisting entirely of peptonised milk.

Hypovitaminous infant No. 5, under "non-surgical" treatment for pyloric stenosis, had received only 2 drachms of orange juice per day since admission, three months previously, but had been vomiting continually.

Hypovitaminous infant No. 6 was the child of unemployed parents, and on admission was wasted and malnourished. He had received dried milk from birth with orange juice only very irregularly, and since admission was given Benger's food without fruit juice.

Cured scurvy.—For details see Nos. 1, 2, and 3 above.

Controls.—No. 10 (17 weeks) had been on the breast since birth, without orange juice, and is of special interest as showing a good state of "vitamin C saturation."

No. 11. Had received 1 oz. of orange juice daily since admission to hospital.

No. 12. Breast-fed for four months. "Cow and Gate" dried milk for one month. No orange juice.

No. 13. Breast-fed from birth.

No. 14. Diet "normal."

No. 15. Cow's milk.

No. 16. Breast-fed.

No. 17. "Ordinary diet" from birth.

No. 18. "Normal diet."

No. 19. Had received a standard, good mixed diet at an institution and shows good urinary concentration of vitamin C.

Nos. 20 to 22. Past dietary history "normal." Had received normal diet, with half an orange and half an apple daily since admission.

No. 23. Low protein diet. Orange juice daily for past fortnight.

No. 24. Had been receiving 4 oz. of pineapple juice daily for the past seven weeks. The corresponding high value for vitamin-C concentration in urine is of interest.

TABLE II.—RESPONSE OF SCORBUTIC AND NORMAL SUBJECTS TO TEST DOSE OF VITAMIN C

No.	Date.	Age.	Diagnosis.*	Dose of vitamin C given.	Amount of vitamin C excreted in 24 hours period following dose.
3	Nov. 4, 1934	7 mos.	Scurvy.	100 mg. (as ascorbic acid)	0·7
1	Sept. 15–16, ,,	8 ,,	,,	85 mg. } as orange juice	≤ 0·4 Scorbutic infants.
6	Nov. 4, ,,	11 ,,	"Sub-scurvy."	170 mg. } as orange juice	≤ 0·5
9	Oct. 27, ,,	8 ,,	Scurvy cured.	100 mg. (as ascorbic acid)	≤ 0·3
1		9 ,,	,, ,,		
17	Nov. 4, ,,	1 yr. 1 mo.	No scorbutic history.	100 mg. } as ascorbic acid	10·9 Controls.
18		3 yrs. 2 mos.	,, ,,	100 mg. } as ascorbic acid	5·0
				100 mg. } as ascorbic acid	8·0

* For details of dietary histories see protocols above. Similar results for adults are given in Table III. B.

that the method may in fact be of use in this direction.

Three examples from our experiences with infants may first be given. A specimen of urine (Case 5, Table I.) was found on test to give markedly low values compared with the "normal" range for control infants of the same age. We therefore reported that we suspected hypovitaminosis C; and our conclusion was seen to be justified when it was found, on reference to the records, that the infant had been on a diet low in the vitamin for some months past, and had also been vomiting continually for several weeks.

Tests were carried out on another occasion on two other infants who had been diagnosed as suffering from malnutrition, and whose histories showed that they had been fed on diets deficient in vitamin C. In both cases low values were again found for the vitamin C in their urine (Case 6, Fig. 2). To obtain confirmatory evidence a test dose of vitamin C was fed to one of these infants, and he was duly shown to be "unsaturated" (Case 6, Fig. 2). Well-nourished controls examined at the same time showed good normal peaks (Fig. 2).

The method has also been of service in the opposite direction, in confirming the absence of vitamin deficiency in suspected cases. For example, a child with swollen tender joint, blood effusion, and blood-cells in its urine was suspected of suffering from scurvy. Our analysis of samples of the urine however showed that it contained a high concentration of vitamin C. Reference to the past dietary history then made it clear that the child had received ample vitamin C, and finally diagnosis by radiography revealed fracture of head of left femur due to osteoporosis.

URINARY OUTPUT AT DIFFERENT AGES

Further surveys are still needed to obtain more accurate figures of the "average" range of values for normal subjects of different age-groups. From the data we have already collected however (see Table I.) it may be said that the daily output gradually increases from a normal value of about 1 to 2 mg. for a young child to a level of about 15–30 mg. for a normal adult on an average "middle-class" or "higher-working-class" diet. Indications have been obtained of intermediate values for children and adolescents. In the summer, when more fruit is eaten, averages are higher than in the winter (cf. Tables III. and III. B).

OBSERVATIONS ON ADULTS

The effects of variations in the dietary intake of vitamin C upon the urinary excretion of a normal adult subject are shown in Fig. 3. While this individual was restricted to a vitamin C-free diet for eight days he continued to excrete vitamin C at a steady rate of about 20 mg. per day. For the next ten days a daily allowance of 140 mg. of vitamin C was given (in the form of orange juice, approximately 220 c.cm. per day; or that is about eight times the reputed minimum daily dose needed to protect against definite symptoms of scurvy). The result was a slight rise only in the output of vitamin C—namely, to about 24 mg. per day. But when, after a further period on a vitamin C-free diet the vitamin was then fed at twice the previous level (280 mg. per day, in the form of approximately 380 c.cm. of orange juice), the subject rapidly became "saturated," and after six days he was excreting it at the rate of 225 mg. per day—that is to say, about 80 per cent. of his total daily intake. When the excess of vitamin

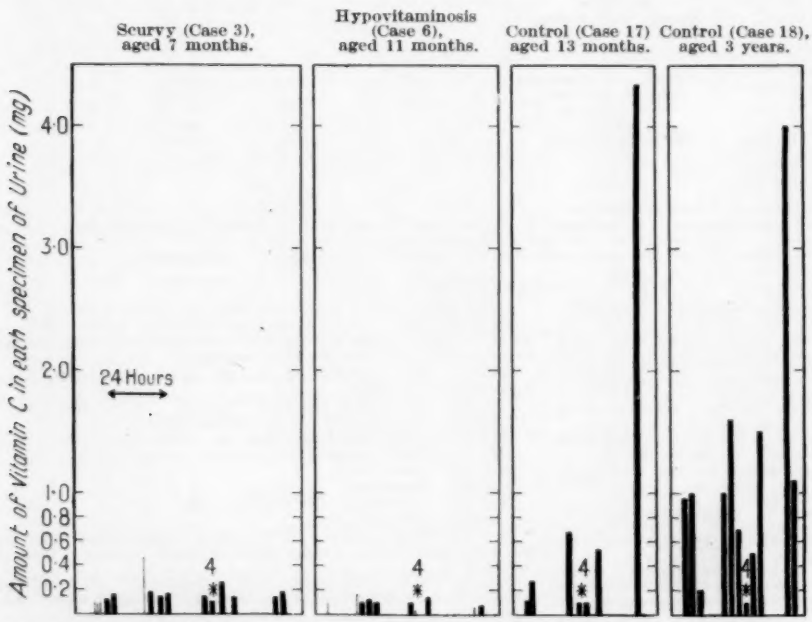

FIG. 2.—Excretion of vitamin C by scorbutic and hypovitaminous infants compared with controls; showing also the effect of test doses. The test dose (100 mg.) was given at points indicated by the asterisks (numbered 4). Note that it caused a marked response with the "saturated" normal controls, but not with the "unsaturated" scorbutic or hypovitaminous infants.

was withdrawn from the diet the excretion rapidly fell, and in another four days was little above the normal level.

The effect of giving a single large dose of vitamin C to a normal adult subject, according to the technique of our diagnostic test, is shown in Fig. 4 and Table II. The sharp peak is clearly brought out on each occasion.

Correlation with state of vitamin-C subnutrition.—Although we have not yet examined a large number of subjects, evidence has already been obtained indicating that individuals accustomed to get too small amounts of fruit or vegetables or other source of vitamin C in their diet excrete less of the vitamin (under controlled test conditions) than do those fed on better, mixed diets (see Table III.). This lower output of vitamin C, we find, goes parallel not only with their dietary habits but also with the test for actual vitamin C subnutrition as measured by lowered capillary resistance (Göthlin technique [19]). Again, those subjects on diets poorer in vitamin C, and excreting less of it in their urine, showed a lower response when a large test dose of the vitamin was fed according to the technique already described (Table III B.). There is thus good preliminary evidence of the practical value of the method, and we hope to publish later the results of the more detailed systematic surveys on which we are at present engaged. This method of urinary analysis has certain advantages over the alternative method of measuring vitamin-C subnutrition by the test of capillary resistance: (1) it is more truly specific, (2) it expresses results in a more accurately quantitative form, and (3) repeated measurements can be made at any time, instead of at intervals of two to three weeks only.

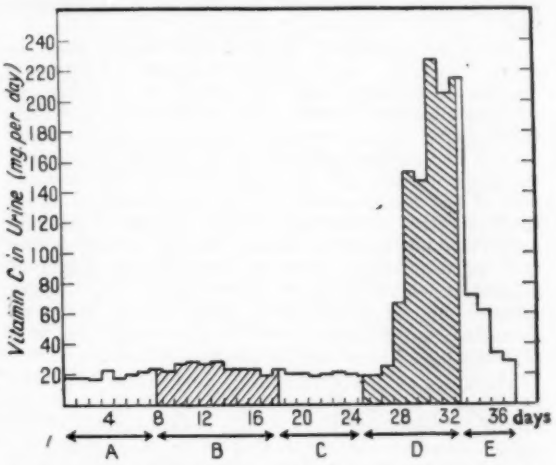

FIG. 3.—Daily excretion of vitamin C by an adult with varying intake of the vitamin. The heights of the columns represent the amounts of the vitamin excreted each day. A = vitamin C-free diet; B = 140 mg. ascorbic acid per day, in four daily doses; C = vitamin C-free diet; D = 280 mg. ascorbic acid per day, in four daily doses; E = vitamin C-free diet.

GENERAL CONCLUSIONS

Our results show that scorbutic or hypovitaminous children tend to excrete less vitamin C than do well-nourished children of the same age. More reliable results as to the state of vitamin saturation or unsaturation can be obtained however, as we have shown, by watching the effect of administering large test doses of the vitamin. Thus while it seems true that a presumption may fairly be raised that an infant is below the "vitamin standard" if it excretes less than, say, 1 mg. of vitamin C per day, we think a confirmatory test to determine the degree of saturation by the "test dose" method is always necessary; and for this purpose a routine dose of, say, 100 mg. may be suggested provisionally as suitable for an infant at the age of weaning. For an adult of average weight a dose of about 600 mg. seems suitable, and for children pro rata according to the body-weight. The response will vary according to the "state of saturation" of the subject,

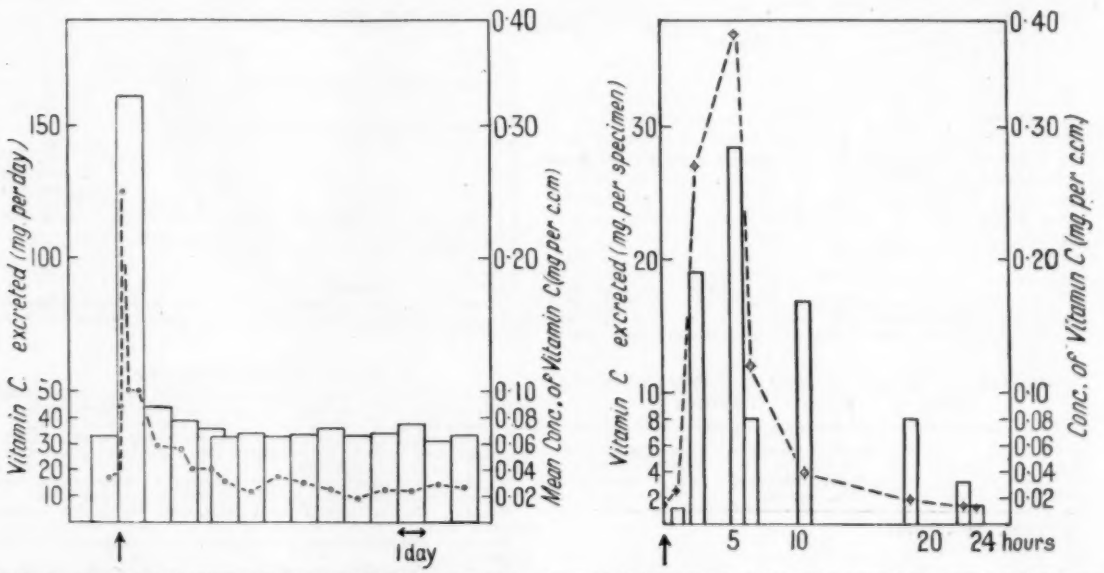

FIG. 4.—Excretion of vitamin C by an adult after test doses. On the left is a record of the daily output of vitamin C (following a dose of 500 mg. in the form of orange juice); on the right is a more detailed hourly record of excretion following an equal dose of synthetic vitamin C. The heights of the columns represent amounts of vitamin excreted, and the circles indicate the concentration of the vitamin in the urine. The chart on the left gives daily totals, whereas that on the right gives detailed values for every specimen of urine passed. The test dose was given at the point indicated by the arrow.

depending on the amount of vitamin C in his past diet.*

It is recognised, of course, that there may be some "margin" or "degree of safety" between a "state of unsaturation," indicated by a failure to excrete vitamin C when a test dose is fed, and that fuller degree of deprivation which is needed to bring on the definite harmful effects of vitamin deficiency. On the other hand, it is preferable to be on the right side of the margin—and indeed our observations on scorbutic and on normal children do show that no very large allowance of orange juice is in fact needed to bring a child (or adult) to that suitable degree of saturation which can be measured by our test. Again, infants fed on breast milk from birth, with no vitamin-C supplement, have been shown to be in a satisfactory state of saturation by the test.

The daily *output* of vitamin C in the urine of course furnishes a far more stable measure of the state of vitamin-C nutrition than does a determination of its mere concentration, since the latter fluctuates considerably according to the volume of urine passed. Nevertheless, if a child is known to be excreting neither more nor less than an average bulk of urine, and the concentration of ascorbic acid is found to be consistently above the limit of 0·01 to 0·02 mg. per c.cm., it may be safely assumed that his vitamin reserves are adequate. The same argument applies to an adult, except that the level of 0·02 to 0·03 mg. per day may be substituted for 0·01 to 0·02.

* If the test dose causes no appreciable response—indicating a low degree of saturation—further information may be obtained by giving a second dose the next day, in order to distinguish between severe and more moderate degrees of vitamin deprivation. An individual suffering from a more advanced condition of avitaminosis will require the administration of a number of such doses before a state of stable saturation is finally brought about, while with lesser degrees of deficiency saturation is more readily brought about. Details of these more quantitative aspects of the test we propose to elaborate in a later paper.

TABLE IV.—*Vitamin-C Content of Human Compared with Cow's Milk*

Date in 1934.	Mothers' initials (with age of baby in months).	Conc. of vitamin C. mg. per c.cm.	Date in 1934.	Cow No.	Conc. of vitamin C mg. per c.cm.
June 28	H.R. (3)	0·060	COW'S MILK—(*continued*)		
,, 29	R.R. (3)	0·053	Oct. 1	2	0·017
July 10	J.F. (2)	0·063		3	0·019
,, 11	J.R. (10)	0·051		4	0·019
,, 12	J.H. (3)	0·046		5	0·021
,, 13	M.I. (2)	0·067		6	0·020
,, 16	A.L. (3)	0·045		7	0·016
,, 18	C.L. (5)	0·054			
,, 19	D.B. (4)	0·027*	,, 2	8	0·020
,, 20	R.H. (4)	0·053		9	0·020
,, 23	L.S. (5)	0·065		10	0·020
,, 24	W.H. (3)	0·085		11	0·025
,, 25	A.R. (8)	0·060		12	0·021
				13	0·028
	Median	0·060			
	Aver.	0·056	,, 3	6	0·019
	COW'S MILK			7	0·018
	Cow No.			10	0·022
June 29	1	0·014	,, 5	6	0·019
July 10	2	0·023		7	0·018
,, 10	3	0·024		10	0·022
,, 12	4	0·017			
	5	0·016		Median	0·020
,, 18	6	0·013		Aver.	0·020
	7	0·017			
	Median	0·017			
	Aver.	0·018			

* Abnormally watery specimen.

VITAMIN C IN BREAST MILK

It is well known that scurvy is comparatively rare in breast-fed infants. The reason, we think, is to be found in the results given in Table IV. Specimens of breast milk which we have examined contained from three to four times as much vitamin C as did a series of specimens of cow's milk taken straight from the udder. And when it is remembered that a

TABLE III.—DAILY EXCRETION OF VITAMIN C BY ADULTS

No.	Date.	Age.	State of nutrition.	Past dietary history.*	Mean conc.	Daily output.†
25	May 13, 1933	19	Subnormal capillary resistance (5–6 petechiæ in Göthlin test).	Diet low in vitamin C (eats little fruit or vegetables).	< 0·014	
	Sept. 24, 1934				0·006	11·74
	Oct. 30, ,,				0·015	21·4
	,, 31, ,,				0·017	16·4
	Nov. 1, ,,				0·018	15·3
26	Oct. 30, ,,	18		Diet rather low in vitamin C.	0·027	18·2
	,, 31, ,,				0·027	19·2
	Nov. 1, ,,				0·021	15·8
27	Sept. 24, ,,	25		Diet rather low in fruit.	0·01	19·7
28	,, 24, ,,	36		Normal.	0·02	19·6
29	May 13, 1933	34	Normal capillary resistance.	,,		31–37 (av. 33)
	April 5–12, 1934					18–22 (av. 20)
	,, 24–30, ,,			,,		19–21 (av. 20)
30	May 13, 1933	22		,,	0·024	20 (approx.)
31	Sept. 24, ,,	27		Diet rich in fruit and vegetables.	0·02	32·4
32	May 13, 1933	21		Liberal vitamin C intake.	0·028	38·1

* For details of dietary habits see protocol.

† These figures represent typical summer values: in the winter, with a lower intake of fresh fruit, &c., the outputs of vitamin C were considerably reduced—e.g., 8–17 mg. per day. Determinations by the test-dose method gave results closely parallel with the above in their indications of the varying vitamin C reserves of the different subjects. (See Table IIIB.)

TABLE IIIB.—*Effect of Test Dose on Adults at Varying Levels of Vitamin C Nutrition*

No.	Date.	Rate of excretion of vitamin C before test dose. Mg. per day.	Response to test dose of 600 mg. Mg. excreted in 24 hours.
26	Dec. 16–20, 1934	8	17
33		14	35
32		15	50
28		17	122
29	May 13, 1933	33	161*

* 556 mg. only given.

DETAILS OF DIETARY HISTORY

No. 25. Never takes oranges and only rarely other fresh fruit, except for an occasional banana; takes potatoes regularly; may have salad in summer; moderate allowance of milk.

No. 26. Scarcely ever has oranges or apples or other fruit, but may have salads in summer; no vegetables apart from potato; intake of milk low.

No. 27. Has about two to three oranges per week but no other fruit, and no vegetables apart from potato. Ample milk.

No. 28. Normal mixed diet; fruit, and vegetables several times a week.

No. 29. Normal mixed diet; fruit, and vegetables several times a week.

No. 30. Eats fruit regularly—e.g., about three oranges a week—and takes vegetables.

No. 31. Had eaten fruit daily during summer, including oranges.

No. 32. Eats one or more oranges or other fruit daily ample vegetables and salads.

further loss generally occurs in the vitamin-C activity of the cow's milk before it reaches the infant, as a result (1) of pasteurisation, (2) of ageing, (3) of reheating, and generally (4) of dilution—it is apparent that the bottle-fed baby is at a serious disadvantage compared with the baby at the breast. The need for supplementing the bottle with orange juice, already so well established empirically by clinical experience, therefore now receives its scientific explanation.

The cow is known to synthesise its own vitamin C, and not to depend on that in the food. It is unlikely therefore that cow's milk can be affected significantly by changes in the diet of the cow. Confirmation for this conclusion is to be found from a recent note by Wijngaarden,[20] whose estimations of the vitamin-C content of specimens of cow's milk collected during the winter months in Holland, either from pasture-fed or from stall-fed cows—viz., from 0·015 to 0·023 mg. of vitamin C per c.cm.—are almost identical with our own values which were determined in England during the spring, summer, and autumn.

In conclusion we wish to express once again our gratitude to Prof. Leonard Parsons and Dr. Eric Pritchard for permitting us to make observations on a number of infants under their care. We are indebted to Miss P. Malden of the Cambridge Mothercraft Clinic for giving us facilities for collecting specimens of human milk.

Summary

Infants suffering from manifest scurvy, or with a history of vitamin-C underfeeding, excrete less vitamin C in their urine (measured chemically) than do well-nourished infants of the same age tested under the same conditions (on controlled diets low in vitamin C). The difference can be made more strikingly manifest by the administration of a large test dose of vitamin C: a marked peak results in the curve of the urinary excretion for the normal infants, but not for the "unsaturated," scorbutic or semi-scorbutic infants. After cure the scorbutic infant behaves like a normal infant both in his output of vitamin C on ordinary diets (or controlled vitamin C-free diets) and in his response after the test dose.

Further observations on adults are also reported, showing that a low urinary output, and a low response to test doses, go parallel with a history of vitamin-C underfeeding, and with a state of vitamin-C subnutrition as indicated by a lowered capillary resistance. The technique described is being used to estimate the prevalence of hypovitaminosis C among certain sections of the community.

The rarity of scurvy in breast-fed infants is explained by the finding that human milk contains three to four times the amount of vitamin C in cow's milk; part of the latter is also lost generally (1) by pasteurisation, (2) during standing, (3) by further heating, and (4) by dilution.

REFERENCES

1. Harris, L. J., and Ray, S. N.: Biochem. Jour., 1933, xxvii., 303; Birch, T. W., Harris, and Ray: Ibid., 1933, xxvii., 590.
2. Tillmans, J., Hirsch, P., and Jackisch, J.: Zeits. f. Untersuch. d. Lebensm., 1932, lxii., 241.
3. Harris: Analyst, 1934, p. 93.
4. ,, : Nature, 1933, cxxxi., 27.
5. ,, and Ray: Biochem. Jour., 1933, xxvii., 303.
6. ,, ,, ,, : Ibid., 1933, xxvii., 2006.
7. Birch, and Dann, W. J.: Nature, 1933, cxxxi., 469.
8. Robertson, R. B., and Harris: Unpublished work.
9. Hopkins, F. G.: Chem. Ind., 1934, liii., 874.
10. Harris, Ray, and Ward, A.: Biochem. Jour., 1933, xxvii., 2011.
11. Eekelen, M. van, Emmerie, A., Josephy, B., and Wolff, L. J.: Acta Brevia Neerl., 1933, iii., 168.

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MIXED TUMOURS OF THE BRAIN

A RECORD OF TWO CASES

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Mixed tumours within the cranium are sufficiently uncommon to warrant the reporting of these two cases, one of which is of much clinical interest in relation to the functions of the hypothalamus.

Hosoi in 1930 collected from the literature 17 cases of teratomata and 23 teratoid tumours: to these he added a fresh case of a teratoma. All of the tumours occurred at or near the midline of the body and appeared to originate usually in the pineal body (19 cases) or in the pituitary (9 cases). Less frequent sites were the choroid plexus, the tela choroidea of the third ventricle, the brain substance itself, the region of the tuber cinereum, the cerebellum, the cerebello-pontine angle, and the inner surface of the dura mater. The tumours varied in size from that of a split pea to $8 \times 10 \times 12$ cm., and were generally cystic. Ectodermal and mesodermal structures were the most frequent histological findings. Of the teratomata 15 occurred in males and 2 in females (the sex of one patient was not given), and 78 per cent. of the patients were below the age of twenty years; there were 14 teratoid tumours in males and 8 in females, 52 per cent. of the patients being less than twenty years of age.

Since this review of Hosoi's, two cases of mixed tumour within the cranium have been recorded.

du Marchie Sarvaas also in 1930 reported the case of a twelve-year-old boy who suffered from diabetes insipidus for three years before death and a terminal paralysis of ocular nerves with optic atrophy. A tumour $3·5 \times 6·5 \times 12$ cm. occupied the distended sella turcica. Microscopically it contained true bone, cartilage, fat, smooth muscle, embryonal nervous tissue with a central canal, glandular structures (one of which resembled a trachea), and cholesteatomatous masses surrounded by a ring of foreign-body giant cells.

Mari in 1933 described a teratoid tumour in a boy of eight years who had had repeated left-sided convulsive seizures since the age of one year, followed by a slowly progressive paralysis, and ending with the typical syndrome of increased intracranial pressure. The tumour was in the form of a large cyst, $11 \times 7·5 \times 6·9$ cm., in the interior of the right cerebral hemisphere, reaching as far forward as 12 cm. from the frontal pole and extending backwards to be continuous with a granular nobbly mass that protruded from the posterior pole of the occipital lobe. Histologically there were present connective tissue with fat, elastic fibres, smooth muscle, cartilage, and bone, cubical and keratinising squamous epithelium. No true skin, glands, respiratory epithelium, nervous tissue, nor striated muscle were found. The tumour is peculiar in being situated away from the midline.

(*Continued from previous column*)

12. Hess, A. F., and Benjamin, H. R.: Proc. Soc. Exp. Biol., Med., 1934, xxxi., 855.
13. Johnson, S. W., and Zilva, S. S.: Biochem. Jour., 1934, xxviii., 1393.
14. Walle, N. van der: Ibid., 1922, xvi., 713.
15. Eekelen, Emmerie, Josephy, and Wolff, L. K.: Nature, 1933, cxxxii., 315.
16. Rohmer, P., Sanders, U., and Bezssonoff, N.: Ibid., 1934, cxxxiv., 142.
16a. Eekelen, Emmerie, Josephy, and Wolff: Klin. Woch., 1934, xiii., 564.
17. Emmerie: Biochem. Jour., 1934, xxviii., 268.
18. Sullivan, M. X.: U.S. Pub. Health Rep., 1926, xli., 1030.
19. Göthlin, G. F.: Skand. Arch. f. Physiol., 1931, lxi., 225.
20. Wijngaarden, J. C. H. van: Acta Brevia Neerl., 1934, iv., 49.

CASE 1

A girl, aged 9 years 11 months, was admitted into hospital on Dec. 3rd, 1933, and died ten days later. The following history was given by her mother, an intelligent observant woman.

The patient was the elder of two sisters and from birth had been of an unusual temperament; the contrast being made more manifest to her parents after the birth of the second child who had normal reactions. As an infant she used to sleep considerably longer hours than the average for her age, and during her sleep she would never move, so that the cot side was habitually left down without fear of her falling out. As she grew older it was noticed that she was very undemonstrative in the expression of emotions; she never showed joy or excitement. When given a birthday present she would calmly put it on one side and not look at it again. If given a book the picture on the cover of which did not please her, she would not open it. She never showed fear in the ordinary way, although she apparently felt fear especially of loud noises, darkness, solitude, and certain persons. She would tell her parents that she was afraid, but her expression and voice were calm. What was taken to be anger was shown by sudden refusal to comply with suggestions. She had, however, what was taken to be a sense of humour and would laugh at a funny situation.

With this absence of expressiveness she yet appeared to have strong feelings and was very loyal to her parents and to such few friends as she made. With acquaintances she displayed none of the usual childish graces, so that her parents were distressed at her off-hand and apparently rude manners to chance callers. In this respect she appeared to be incorrigible and even unconscious of defect. She was very impenetrable to suggestion, and what her parents called "strong-willed." Her calm behaviour seems to be evidenced by the fact that she never used to dirty or rumple her dress.

FIG. 1 (Case 1).—Photograph of base of brain.

All her life she was liable to frequent sudden rises of temperature followed shortly by sudden falls. As her mother put it "every time she caught cold her temperature would rise to about 104° and a few hours later fall to normal." Her hearing had always been unusually acute. Her mental powers were good; she had an excellent memory, and took an interest in keeping her father's accounts. Her balance when walking or standing was never very good; when she tripped she seemed to have less than the usual powers of recovery, and would fall flat on the floor. Her general nutrition up to 1930 had been moderate though she was perhaps a little small for her age.

Three years before her death she had suffered from mumps and whooping-cough in quick succession. The former illness lasted a month and, after a week's return to school, whooping-cough began and lasted some five months. During this illness she wasted a good deal. Immediately following the cough it was noticed that she was drinking heavily and passing large quantities of pale urine both day and night. This was associated with a poor appetite for solid food and a continuance of the wasting; from this time she appeared not to grow at all. She was taken to three different doctors who all said that there was no sugar in the urine. The polyuria continued up to about five weeks before her death, and then ceased somewhat abruptly. Shortly after the whooping-cough it was noticed that her emotional reactions were further diminished—from this time she never shed a tear. Some three or four weeks before her death she found that she was unable to walk, and spontaneously surmised that she was going to die; she said in an indifferent tone, "Well, we can't help it."

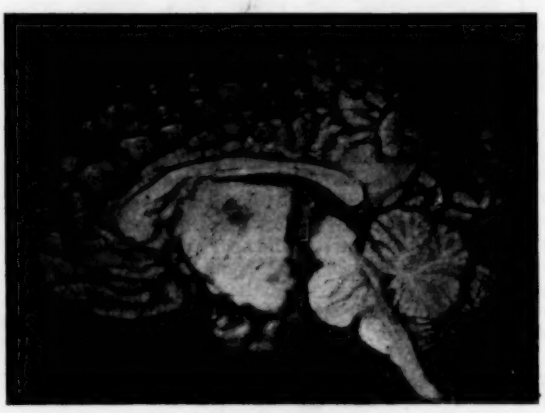

FIG. 2 (Case 1).—Sagittal section of brain.

During the winter following the whooping-cough she appeared to feel the cold intensely, and would do all she could to huddle in front of a big fire. This sensation steadily became worse, and during the exceptionally hot summer of 1933 she would wear an overcoat at meals. This feeling of cold ceased abruptly two or three weeks before death. During this same summer it was noticed that she had begun to fall asleep in unusual places; she would come home from school and suddenly go to sleep in a chair. After the whooping-cough she began to lose her powers of concentration until, eventually, after fetching clothes for a doll she would leave it undressed. She also became interested in babyish books and toys.

Her power of vision was lost apparently quite rapidly about five weeks before her death. She did not call attention to it herself, but when her mother noticed a staggering gait, she acknowledged that she could not see where she was going.

On admission she was pale and thin; weight 2 st. 8 lb. She was remarkably drowsy though answering questions rationally when roused. The pupils were equal and reacted both to light and on accommodation. No cranial nerve paralysis was found; the deep reflexes and plantar responses were normal. The muscles were hypotonic; the abdomen scaphoid and poorly covered. Examination of the retinæ showed marked pallor of the central area of each disc. Urine, sp.g. 1020, no abnormalities. On the next day her condition was worse. She was now comatose with shallow breathing and collapsed veins. During the next five days her temperature was raised to a maximum of 101°, but thereafter it was below normal.

Post mortem a firm tumour with a smooth lobulated surface was found projecting from the base of the brain in the hypothalamic region behind the optic chiasma (Figs. 1 and 2). The body showed no other abnormality except for enlargement of the mesenteric glands with evidence of tuberculous infection. The pituitary gland appeared to be normal, but no sections were taken.

The *tumour* was firm, encapsulated, and measured 3×3·5×4·5 cm. The cut surface had a dense whorled appearance with several small cysts containing sticky fluid. Microscopically the tumour consisted of irregularly scattered epithelial elements in a stroma that varied from a dense connective tissue containing numerous collagen and elastic fibrils to a loose myxomatous tissue. Bands of smooth muscle formed a prominent feature. The epithelial elements were frequently in the form of glandular spaces bounded by columnar cells either in a single layer or two to three layers thick. Some of these cells contained intracellular mucin, and this material was present in the gland space. Other glandular elements gave no evidence of a secretion of mucin. In one area there was an arrangement of epithelial cells closely resembling fœtal glomeruli, and showing occasionally a paired arrangement. In other areas obvious epithelial cells showed but little differentiation and could not be identified as representing adult structures. Blood-vessels were few but well formed. A few microscopical areas of necrosis and calcification were surrounded by foreign-body giant cells.

CASE 2

By the kindness of Prof. G. W. Nicholson, of Guy's Hospital, we are permitted to record the following case from his collection of teratomata. He will himself be writing about it at a later date when he comes to discuss the occurrence of lung tissue in mixed tumours.

A female child was admitted to hospital at the age of six weeks with a swelling in the region of the

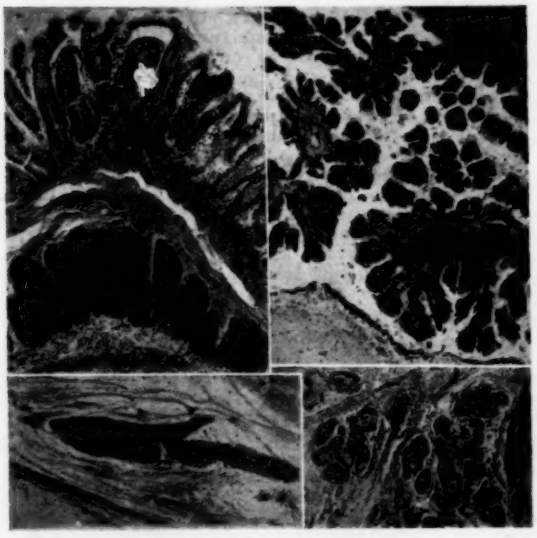

FIG. 3 (Case 2).—Composite photomicrograph showing intestine, ependyma, ganglion with nerve, salivary gland.

anterior fontanelle, noticed by the mother four days previously. Ventricular puncture showed the fluid to be under a pressure of 380 mm. The Wassermann and other reactions were negative. The head became increasingly large; the circumference two months before death at age of one year was 17¾ in., two days before death it was 22 in.

Post mortem.—Skull enormously enlarged, bulging over the eyes. Dilated veins over the scalp. Fontanelle widely distended, sutures open. Meninges normal; no signs of inflammation. The brain collapsed on removal

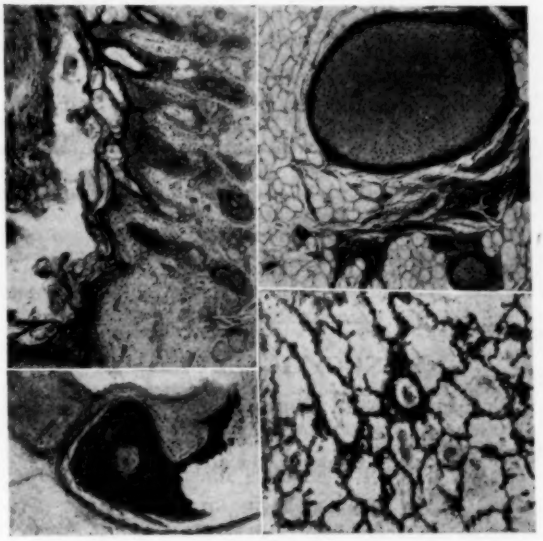

FIG. 4 (Case 2).—Composite photomicrograph showing skin, cartilage and fat, bone, lung with bronchus.

and about two pints of clear yellow fluid escaped. The brain substance was soft and very thin; the ventricles were widely dilated; hydrocephalus of general distribution with distinct flattening of the cortical convolutions. The meninges were intact and of healthy appearance except where included in the "capsule" of the tumour described below. The lungs were congested and showed patches of recent broncho-pneumonia in the upper lobes of both sides. Th suprarenals appeared slightly larger than normal; otherwise there were no abnormalities.

A firm lobulated mass, roughly oval, and measuring 2¼ in. × 1¼ in., with its long axis parallel to the axis of the spinal cord, occupied the entire cavity of the fourth ventricle. The meninges over the roof of this ventricle were thickened and bound firmly to the surface of the tumour, so that the foramina of Luschka and of Magendie were occluded. Anteriorly the mass pressed aside the pontine and medullary brain matter but was not connected with it. It appeared that the tumour had taken origin in either the ventricular floor or the roof, probably the latter, because of its closer attachment to the roof meninges. No infiltration was evident by direct examination. Section of the mass at post mortem proved a little difficult, many masses of cartilage lying in the more solid parts. The general arrangement was a series of small cysts containing mucoid material and embedded in a firm white stroma presenting irregular nodular thickenings and occasional cartilaginous masses. The outline of the tumour though irregular was well defined, a thick fibrous tissue being bound up with the meninges over the entire posterior surface. There were no hæmorrhages and no evidence of necrosis. The mass was thought at the time to be either a cystic glioma or a cartilage-containing teratoma.

Sections show that the tumour is a genuine teratoma (Figs. 3 and 4). Of mesodermal structure there are present, besides ordinary connective tissue, fat tissue, cartilage, bone, and smooth muscle. Endoderm is represented by undoubted gut with a layered musculature and a mucosa showing crypts but no villi; practically all the cells lining the gut are goblet cells. Belonging to this layer are also several nodules of lung tissue containing bronchi. From ectoderm

come true skin containing sebaceous glands, cysts lined by ependyma and surrounded by brain tissue, ganglia of nerve-cells with associated nerves. There are also present mucous glands resembling a mixed salivary gland, and numerous cysts lined by epithelium of varied types that cannot readily be identified with normal adult structures.

SUMMARY

Descriptions are given of a teratoid tumour in the hypothalamic region of a girl of nine years, and of a teratoma in the fourth ventricle of a girl one year old. In the first case peculiar symptoms characteristic of affections of the hypothalamic region are described.

REFERENCES

Hosoi, Kiyoshi: Arch. of Path., 1930, ix., 1207.
Mari, A.: Riv. di pat. nerv., 1933, xli., 531.
Sarvaas, G. J. du Marchie: Frankfurt. Zeits. f. Path., 1930, xl., 210.

MONOCYTIC LEUKÆMIA

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MONOCYTIC leukæmia, as a condition distinct from myeloid leukæmia, has only recently been accepted as a definite entity. The first case, described by Reschad and Schilling-Torgau in 1913, as well as the next two recorded cases, were reviewed by Naegeli in 1931 and considered by him to be merely temporary variations of myelogenous leukæmia into which condition the leukæmic process would inevitably have passed unless death had supervened. Naegeli maintained that the monocytes described were unusual forms of myeloblasts, a view which even to this day is supported by Piney (1931). It must, however, be borne in mind that both Naegeli and Piney regard the monocyte as a cell derived directly from the myeloblast.

The number of recorded cases of undoubted monocytic leukæmia now exceeds 40. The descriptions of these cases, and particularly the critical reviews with complete bibliography given by Dameshek (1930), by Gittins and Hawkesley (1933), and by Doan and Wiseman (1934), leave no doubt that Naegeli's views were incorrect and that a leukæmia occurs in which the blood picture is predominantly monocytic. In this country one case has been recorded by Cooke (1931) and two by Orr (1933). Monocytic leukæmia is rare and the absolute diagnosis of the condition during life is rendered difficult by the fact that during the acute or the final phases of the disease the predominant cells are primitive and may be difficult to distinguish from myeloblasts. Furthermore, mixed leukæmias occur—that is, myeloid leukæmias in which there are considerable numbers of monocytes as well as myelocytes (Merklen and Wolf (1928) and Levine quoted by Foord, Parsons, and Butt (1933)). In these mixed cases the blood picture may at one time show the myelocyte as dominant, and at another time the monocyte.

Occasionally the blood count may show remarkable periodic variations between leukæmia and a normal count, which variations are associated with relapses and remissions in the clinical state but are unrelated to any treatment, if such there be, designed to control the leukæmic condition. The case here recorded exhibited two remissions of this kind and each of the attacks appeared to us to be preceded by, probably induced by, an infective process—the first by tonsillitis, the second by infection of the injured tissue caused by a tooth extraction, and the third by a "cold." From the literature and from our own experience it appears that monocytic leukæmia is associated with certain clinical features which are not found in other leukæmias. We shall first describe the case in particular and emphasise these features in the discussion.

CASE RECORD

CLINICAL COURSE

The patient was a married woman of 44 with a history of having always been pale and anæmic, though she had led a healthy and active life. About ten days before taking to her bed she had had a mild attack of influenza during which she had kept up and from which, consequently, she made a poor recovery and remained weak and depressed. Ten days later she became feverish and went to bed and was found to have moist sounds at both bases; a week later the eyelids became swollen and there was much lassitude with frequent backache. The chest signs cleared up to be followed in about a week by enlargement of the cervical and submaxillary glands on both sides. This was quickly followed by the development of tonsillitis and gingivitis and constituted the inception of what was the first acute leukæmic attack. The tonsillitis cleared remarkably quickly but the gingivitis progressed to a necrotic ulcerating lesion around the right upper molar

HÆMATOLOGICAL RECORD

Date.	Jan. 30.	Feb. 4.	9.	14.	27.	Apr. 5.	May 17.	June 20.	July 20.	Sept. 29.	Dec. 2.	12.	15.
Hæmoglobin (per cent.)	50	46	48	60	60	62	38	35	82	88	78	32	30
Red cells (thous.) ..	2,500	2,300	2,410	3,130	3,300	3,200	2,600	1,560	4,200	4,800	4,000	2,050	2,200
Leucocytes	22,000	6,400	3,600	4,600	6,600	10,000	33,000	3,400	8,800	5,200	190,000	174,000	320,000
Polymorphs.	4·5% (990)	21% (1,344)	19% (684)	22% (1,012)	32% (2,112)	16% (1,600)	5% (1,650)	44% (1,496)	28% (2,464)	30% (1,560)	3% (5,700)	2·5% (4,350)	5% (16,000)
Lymphocytes ..	16·5% (3,630)	50% (3,200)	65% (2,340)	48% (2,208)	55% (3,630)	40% (4,000)	34% (11,220)	22% (748)	66% (5,808)	60% (3,120)	13% (24,700)	12% (20,880)	16% (51,200)
Monocytes	73% (16,060)	29% (1,856)	16% (576)	30% (1,380)	12% (792)	42% (4,200)	61% (20,130)	32% (1,088)	5% (440)	6% (312)	58% (110,200)	67% (116,580)	37% (118,400)
Eosinophils	—	—	—	—	1% (66)	2% (200)	—	2% (68)	1% (88)	4% (208)	1% (1,900)	1·5% (2,610)	—
Primitive cells ..	6% (1,320)	—	—	—	—	—	—	—	—	—	25% (47,500)	17% (29,580)	42% (134,400)
	1st attack.				Remission 11 weeks.		2nd attack.		Remission 20 weeks.		3rd attack.		

teeth associated with a swelling of the face and a hard œdema at the right mandibular angle. There was great difficulty in opening the mouth, much fœtor, weakness, sweating, and fever. There was no enlargement of the spleen or liver or lymph glands with the exception of the cervical glands on the right side. The first blood count (see Table, Jan. 30th, 1933) showed a severe anæmia, a leucocytosis of 22,000 with a differential count containing 73 per cent. of undoubted monocytes and 6 per cent. of a primitive cell resembling a myeloblast and yet by no means typical of this cell. A few days later the fever had subsided and there was a remarkable change in the leucocyte count which is more apparent when the absolute figures are analysed. The counts of Feb. 4th and Feb. 9th show a progressive diminution in monocytes with a rise again on the 14th at which point the first attack may be said to have subsided. During the attack the patient was given two blood transfusions of 400 c.cm., one dose of pentose nucleotide to which she had a violent reaction, and was put on full doses of Liveroid and iron and ammonium citrate. Some improvement in hæmoglobin and red cells resulted. This medicinal treatment was continued energetically in the subsequent remission period of 11 weeks during which time two blood counts were performed which showed that the improvement in the anæmia was maintained but not added to, whilst the count on April 5th showed an ominous increase in monocytes.

At this phase a number of opinions advocated the removal of the right upper molar tooth around which the gum had healed nicely. Within a few days of the extraction the patient became pale and ill and entered the phase of the second attack. The ulceration reappeared at the site of extraction and became so extensive that it exposed the bone of the hard palate. There was fœtor, prostration, and high fever, up to 105° F., lasting for three weeks. The blood counts at the beginning and end of this phase are those of May 17th and June 20th; they show a severe anæmic relapse associated at the onset with an intense monocytosis (20,130). During the attack a transfusion was given and as much iron and liver as the patient could take. When the fever had subsided, as an almost despairing anti-anæmic measure, the patient was given a daily intramuscular injection of 4 c.cm. of Campolon. The subsequent improvement in general health and condition was remarkable, whilst the blood counts of July 20th and Sept. 20th show a striking improvement in the anæmia; the leucocyte counts during this remission phase of five months were characterised by a predominance of lymphocytes. During this period of five months the patient stated that she felt remarkably well and no one who had done the blood count at this phase could ever have suspected a latent leukæmic condition.

The third and final attack, almost a year after the first one, was apparently precipitated by the contraction of a "cold" which had run through the house. She quickly became ill and feverish and the Campolon which during the remission phase had been reduced to a bi-weekly injection, was given daily. Despite this, a severe anæmia rapidly developed and the leucocyte count became frankly leukæmic with typical monocytes as the predominant cell and, for the first time, a goodly proportion of primitive cells, most of which appeared to be myeloblasts. The condition of the patient was pitiful. She had necrosis of the gums, fœtid ulcers on the tongue, and an extensive purpuric eruption consisting of small discrete points. There was no bruising, but many of the purpuric spots became black and necrotic in the centre. During this period of illness the patient menstruated profusely the whole time, and on one occasion passed blood from the rectum; there was no hæmaturia. For the first time in the whole disease the liver became palpable and rapidly reached the umbilicus. The spleen and lymphatic glands, except those in the neck, were not enlarged.

The patient died of exhaustion after about ten days' illness. A partial autopsy confirmed the liver enlargement and the lack of splenic enlargement.

HÆMATOLOGICAL FEATURES

A general analysis of the blood condition during the three acute attacks shows a very definite grading. The anæmia was more severe with each attack, whilst the leucocytosis and monocytosis became progressively more pronounced to terminate with a frankly leukæmic blood picture. The remission intervals were characterised by a normal total leucocyte count with an excess of small lymphocytes. During the terminal phases fair numbers of undoubted myeloblasts were present, but at the onset of the first attack and at the end of the last attack there were primitive cells which in blood films one could only regard as a primitive form of monocyte. At other times the majority of monocytes were typical of those found in normal blood, being about 12–15μ in size with a slightly opaque blue cytoplasm and horseshoe nucleus. In the more acute phases the nucleus was sometimes trefoil or quatrefoil. The primitive cells which were considered to be monoblasts were 15–20μ in size with a greyish-blue cytoplasm, a reniform, oval, or round nucleus with no nucleoli and with a cytoplasm which, in the most typical cases, appeared to be extruded into pseudopodia. The oxidase reaction was often faintly positive. It was unfortunate that the patient was so far placed from a laboratory that supravital preparations could not be made, but the opinion as to the undoubted monocytic nature of the counts was confirmed by independent hæmatologists.

The appearance of myeloblasts in the terminal phases has been recorded by other observers and does not, in our opinion, justify a diagnosis of myeloblastic leukæmia, but merely suggests that the myeloblast and "monoblast" have a common precursor cell.

One of the most striking features of the acute attacks was the rapid subsidence of the monocytosis without any treatment designed to influence the leukæmic process.

HISTOLOGICAL FEATURES

The material obtained at autopsy was kindly examined by Prof. S. L. Baker whose report was as follows:—

Liver.—The general appearance suggests a leukæmia of the myeloid type with considerable cellular infiltrations between the liver cell columns. The infiltrating cells are of various types, but for the most part show an oval, kidney shaped, or crenated nucleus and a well-marked cell protoplasm. A number of these cells are definitely granulocytic, eosinophilic, and neutrophilic; in many, no granules could be distinguished. Similar cell types could be seen in a transverse section of a fair-sized vessel.

Spleen.—Packed with cells similar to those seen in the liver. Lymphoid tissue reduced to a few small foci corresponding to central areas of Malpighian bodies.

Sections of liver and spleen stained to show free iron were negative.

Lymph gland.—Lymphoid tissue reduced to a few small foci. The general appearance resembled a section of bone-marrow. Definite granulocytic (eosinophil myelocytes) present in moderate numbers. Cells on the whole resemble those described in liver. In some areas there are numerous megakaryocytes. A fair number of erythrocytes present, but no normoblasts seen. Phagocytic reticulum cells which included granulocytes and other cells are not infrequent.

Skin.—Groups of cells, many of which correspond to those infiltrating the liver, &c., are found in the dermis. These are mainly around small vessels and around sweat glands.

Marrow.—A section of rib with contained marrow shows cells similar to the above, but no granulocytes can be found and the protoplasm of the cells appears ragged and ill-defined; magakaryocytes sparsely scattered in marrow tissue. A vessel which is included in the section shows cells with similar staining properties to those of the marrow. This rib had been decalcified, and taking into account the appearances of the cells in this vessel, there can be no doubt that the absence of granulocytes and the ragged appearance must be attributed to the decalcifying agent.

Remarks.—The appearances of these organs indicate a leukæmia which must be grouped with the myeloid series rather than the lymphoid. This is supported by: (*a*) the marked reduction of lymphoid tissue in both spleen and lymph gland; and (*b*) the general appearance of the infiltrating cells, many of which were definitely of the myeloid series. The identity of the non-granular cells in the sections, with the monocytes of the blood films, was not easy to establish with certainty, but one could say that the infiltrating cells in the tissues correspond

closely with those seen in such vessels as occurred in the sections and these presumably reflected the blood condition at the time of death.

DISCUSSION

In the first place the clinical features of this case show that monocytic leukæmia is not necessarily rapidly fatal, even when accompanied by acute symptoms such as fever, severe anæmia, and necrotic mouth lesions. This case enjoyed two remissions—a feature unusual in other acute leukæmias. The anæmia in the first two attacks was much more severe than would have appeared probable when estimating the acuteness of the leukæmic process by the number of primitive cells. We were impressed by the distribution of the necrotic lesions in the mouth which appeared to select the alimentary mucosa rather than the respiratory part of the pharynx. Ulceration failed to spread on to the tonsil or into the nose. A striking feature was the terminal hepatic enlargement coincident with the appearance of a frankly leukæmic blood picture. This enlargement was not apparently due to heart failure and was unaccompanied by enlargement of the spleen and lymph glands. Save for the terminal phases there was a very definite granulopenia and for this pentose nucleotide was administered during the first attack. Violent reaction to the preparation prohibited its further use.

The case, as judged by histological sections, appeared to present a partial myeloid termination and indeed the blood during the last few days of life contained a number of myeloblasts. Nevertheless the predominant cell throughout was an unmistakable monocyte.

Prof. Baker, having examined blood films as well as sections, points out how difficult is the comparison of blood-cells in films and in fixed tissue. Histological sections showed no evidence of proliferation of the reticulum cells of the spleen nor of desquamation of new-formed histiocytes into the blood. This has been claimed by other observers. The case, therefore, throws no conclusive light on the origin of the monocyte.

Monocytosis of the blood in association with Vincent's angina has been described by Friedemann and Elkeles (1928) as well as by Hartfall (1934). Similar blood changes are well known as a diagnostic feature of glandular fever in which disease there may sometimes be a definite pharyngitis. Such conditions must be regarded as monocytic reactions to an infection and bear the same relation to monocytic leukæmia as do the polymorphonuclear reactions of pyogenic infections to myeloid leukæmia. Hartfall's experience should be borne in mind when estimating prognosis in the case of necrotic oral lesions associated with monocytosis, for whereas monocytic leukæmia has the usual fatal issue of all leukæmias, the monocytosis of Vincent's angina appears to be benign. Differential diagnosis is made difficult by the fact that leukæmic oral lesions nearly always contain Vincent's spirochæte. The anæmia which usually accompanies leukæmia is a helpful point.

REFERENCES

Cooke, W. E.: THE LANCET, 1931, ii., 129.
Dameshek, W.: Arch. Internal Med., 1930, xlvi., 718.
Doan, C. A., and Wiseman, B. K.: Ann. Internal Med., 1934, viii., 383.
Foord, A. G., Parsons, L., and Butt, E. M.: Jour. Amer. Med. Assoc., 1933, ci., 1859.
Friedemann, U., and Elkeles, A.: Folia Oto-Laryngol., 1928, xxix., 285.
Gittins, R., and Hawkesley, J. C.: Jour. Path. and Bact., 1933, xxxvi., 115.
Hartfall, S. J.: THE LANCET, 1934, i., 620.
Merklen, M., and Wolf, M.: Rev. de Méd., 1928, xlv., 154.
Naegeli, O.: Blutkrankheiten und Blutdiagnostik, 5th ed., Berlin, 1931.
Orr, J. W.: THE LANCET, 1933, i., 403.
Piney, A.: Recent Advances in Hæmatology, London, 1931, p.178.
Reschad, H., and Schilling-Torgau: Münch. med. Woch., 1913, lx., 1981.

VINETHENE

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THE anæsthetic properties of certain unsaturated ethers have been studied by Leake and Chen,[1] who predicted in 1930 that a compound combining the chemical characteristics of ethylene and di-ethyl ether—namely, divinyl oxide or vinyl ether—would be a general anæsthetic, and better than any unsaturated ether with a greater number of carbon atoms in the sidechains. The preparation of pure vinyl ether was undertaken, and has been described by Ruigh and Major.[2] Considerable difficulties were experienced before success rewarded their persistence. The physical properties, vapour pressure, and electric moment of vinyl ether have been investigated and determined by Miles and Menzies,[3] and Smyth and Walls,[4] whilst its anæsthetic properties and pharmacological action have been investigated in mice and dogs by Knoefel, Guedel, and Leake.[5] They found in dogs evidence of less irritation than with chloroform or ethyl ether. Cardiac action was but slightly affected even in relatively deep anæsthesia, whilst the blood pressure was well maintained even after respiration had stopped for ten minutes. Respiration spontaneously recovered after withdrawal of the anæsthetic. The disturbance of the acid-base equilibrium and of the blood-sugar was slight. When administered by the drop method to dogs, anoxæmia being likely, slight pathological changes were noted in the kidney, but when given for two hours or more, or daily for ten days for 30 minutes, by the carbon dioxide absorption technique, no abnormality was noted in any tissue examined. They conclude that in rapidity of action, in production of relaxation, in promptness of recovery, and from the point of view of physiological and pathological effects, vinyl ether is superior to chloroform or ether.

To Samuel Gelfan and Irving R. Bell,[6] of the University of Alberta, Canada, belong the credit of investigating its action on humans. After obtaining a supply of the pure product from Prof. C. D. Leake, of the University of California, where the original research was carried out, Gelfan inhaled vinyl ether on two occasions, for periods of 10 to 18 minutes; it was also given to a volunteer, Dr. Winifred Hughes, for 5 minutes. A few minutes after the withdrawal of the anæsthetic, which had been administered to the point of producing unconsciousness, muscular relaxation, and loss of skin reflexes, recovery was complete, without vomiting or nausea, and both subjects were able to continue their duties shortly after the anæsthesia. They concluded that the result of the animal experiments by Leake and his associates, and their own experiences, showed that vinyl ether was worthy of a clinical trial.

Goldschmidt, Ravdin, and Lucke and others [7] have shown that the concentration of vinyl ether in the blood of the dog necessary to produce anæsthesia is 28 mg. per 100 c.cm. of blood, of ethyl ether 116 mg. per 100 c.cm., of chloroform 37·5 mg. The anæsthetic potency, therefore, of vinyl ether, is about four times that of ethyl ether, and is slightly greater than that of chloroform; in the human, according to these authors, the potency is seven times that of ethyl ether. The ratio between the anæsthetic concentration and the point of respiratory failure in the dog is 2 to 4, as compared with 1·0 to 1·3 for ethyl ether; for chloroform the ratio between the anæsthetic dose and the

point of cessation of cardiac action is 1·0 to 1·5. Their pathological studies in dogs and monkeys are of considerable interest, and have a definite bearing upon the place that vinyl ether may find in anæsthetic practice. Liver necrosis of the same type but less extensive than that following chloroform anæsthesia has been found in well-fed dogs, after two to three hours anæsthesia, but not after shorter periods. Monkeys, whether well fed or starved, show complete immunity. Bromsulphalein dye tests of liver function in parturient women, and in dogs after repeated administration, point to the harmlessness of vinyl ether.[6]

A supply of this anæsthetic was generously placed at the disposal of the Anæsthetics Committee of the Medical Research Council and the Royal Society of Medicine, in 1933, by Messrs. Merck and Company, U.S.A., who are the manufacturers; further supplies have been sent from time to time. This preparation has been given the name of Vinethene. At a recent meeting of the Committee, Dr. Hans Molitor, the pharmacologist, and Dr. Randolph Major, the chemist, who were making a short stay in London were present by invitation, and gave the latest information about vinethene to the members, two of whom (Dr. C. F. Hadfield and myself) have been using it for some months. The Committee has also furnished supplies to Dr. C. Langton Hewer, who has used it in 80 cases; and it has also been used in a few cases by Dr. H. Featherstone, Dr. A. L. Fleming, Dr. I. Magill, Dr. L. D. Marston, and Dr. H. J. Simmons. Their reports are incorporated in this paper.

PROPERTIES AND USE OF VINETHENE

Vinethene is vinyl ether, $CH_2:CH.O.CH:CH_2$, with the addition of 3·5 per cent. of absolute alcohol and 0·01 per cent. of a non-volatile oxidation inhibitor. It is a clear, colourless liquid, except for a purple fluorescence, with a specific gravity of 0·77, and a boiling point of 28·3° C. It possesses a characteristic odour (of garlic), is highly inflammable, and about as explosive as ether. Its vapour is denser than air. It should be kept in well-stoppered containers, in a cool place, remote from lights and fires. It should be kept free, also, from contact with the slightest trace of acid, since it is decomposed by acids to form aldehydes, one of which is formaldehyde. Vinethene left in a bottle should not be used more than 12 hours after the bottle has been opened. It is possible that this precaution is no longer necessary, as Dr. Randolph Major informed the Committee that he thinks the problem of stabilising vinethene has been solved. At the present moment, however, it would be wiser to maintain this precaution, for it is clear from the literature and from a knowledge of the chemical formula that the manufacture of pure vinyl ether is troublesome, as it is highly reactive.

Vinethene has been used in several thousand cases in the United States and in Canada, and in 314 cases by the collaborators of this report. The ages of the patients in our series have ranged from 2 years to 78 years, and the operations have covered almost the whole field of surgery. It is a most interesting anæsthetic. It possesses the best characteristics of ethylene chloride and of ether without their disadvantages, being extremely rapid in action, not unpleasant to inhale, non-irritating to the respiratory passages, with a theoretically wide margin of safety, even when given to the stage of overdose, and a rapid recovery free from unpleasant after-effects, particularly vomiting. Induction is quiet, and consciousness is lost after a few inhalations. The anæsthetic concentration in the blood is rapidly reached. Complete muscular relaxation has not always been obtained. Respiration is quiet and regular; the rate is often faster than is met with during ether anæsthesia. The fall of blood pressure is slight.

Vinethene can be given by the open method, being dropped on to the mask at the rate of about 60 drops per minute, or can be used by the closed method allowing oxygen or nitrous oxide and oxygen to flow through or over it. A preliminary administration of atropine is recommended, although it is not essential for quite short administrations. Morphine and atropine can also be used. Its extreme volatility renders it a wasteful anæsthetic by the open-drop method, except for brief anæsthesia, for example, in out-patient surgery, or in infants and young children; further, an even anæsthesia is difficult to maintain. Owing to the slight risk of impairment of the liver function if the oxygen content of the blood is cut down, the manufacturers recommend that vinethene should not be given by the open-drop method for more than 30 minutes. This instruction clearly visualises a method which should more rightly be called "semi-open." No doubt this precaution could be relaxed if oxygen were given throughout the administration, but this method offers, as already suggested, no advantages over the closed method with oxygen, which provides economy of consumption and smooth anæsthesia. The manufacturers also recommend that this method should not be used for more than one and a half hours. Two deaths from liver necrosis occurred at the Johns Hopkins Hospital, Baltimore; the duration of anæsthesia was respectively 2 hrs. 40 mins. and 1 hr. 40 mins.[7] I have administered it combined with nitrous oxide and oxygen for 1 hr. 32 mins. for an operation for cholecystitis on a man aged 73 years, suffering from jaundice; he made a perfect recovery. I have also given it combined with Avertin, nitrous oxide and oxygen, on two occasions, for operations on the gall-bladder, and on 62 other occasions for abdominal, renal, prostatic, and other operations. In no case has harm resulted. In this connexion it is of interest to note that avertin belongs to a group of drugs which have a toxic action on the liver; the combination of avertin and vinethene should, therefore, on theoretical grounds, be dangerous. Clinical experience, however, lends no support to the view, based upon pharmacological and slight experimental evidence, that avertin is appreciably toxic to the liver. Even in the presence of liver damage it has been used without apparent harm.[9] Our experience with vinethene is in agreement with that of Goldschmidt, Ravdin, and Lucke, who have had no evidence of liver damage after any of their 461 administrations, and with the experimental and clinical findings of Bourne.[8] No impairment of kidney function has been noted by us after its use for prostatectomy, nephrectomy, or pyelolithotomy. Cardiac disease is not a contra-indication. The absence of pulmonary complications is a striking feature. One of us (C. L. H.) anæsthetised a boy suffering from broncho-pneumonia following measles for a bilateral acute mastoid operation. He made an uninterrupted recovery.

It is essential to bear in mind that owing to the high volatility and potency of vinethene the amount necessary to produce anæsthesia is very small, particularly when it is given by the closed method. Experience with it should be gained in minor surgery before more lengthy cases are undertaken. A death from asphyxiation following overdose was reported from St. Mary's Hospital in 1934. A useful and unmistakable sign of commencing overdose is the onset

of rapid shallow breathing; this is quickly relieved in consequence of rapid elimination, and should not cause undue anxiety, as cardiac action continues for several minutes in animals after cessation of respiration. In the ill or enfeebled patient, however, recovery may not be so prompt or so certain, although it should compare favourably with ether in this respect. Death takes place from respiratory failure.

Recovery, even from deep anæsthesia, takes place in a few minutes; the possibility of pain must be foreseen and met by a timely injection of a sedative. The smell of vinethene has proved objectionable to some surgeons and anæsthetists. It can be removed by the addition of oil of bitter orange, or oil of peppermint, immediately *before* administration, or largely prevented by the use of the carbon dioxide absorption technique.

CONCLUSIONS

(1) Vinyl ether has been shown in animals to be a good anæsthetic with a wide margin of safety. In overdosage the respiration stops before the heart. Metabolism is not seriously affected. (2) It is highly inflammable. (3) In man, the evidence up to date shows that vinyl ether is a good anæsthetic, is not irritating to the respiratory passages, usually provides adequate muscular relaxation, and shows a remarkable absence of after-effects, particularly vomiting. (4) Owing to potency and rapidity of action greater care has to be exercised to avoid overdosage than is the case with ethyl ether. (5) Whatever method of administration is employed, anoxæmia must be avoided. (6) Until further clinical experience has been gained vinyl ether should not be used for periods longer than one hour and a half, in view of the slight possibility of damage to the liver.

REFERENCES

1. Leake, C. D., and Chen, M. Y.: Proc. Soc. Exper. Biol. and Med., 1930, xxviii., 151.
2. Ruigh, W. L., and Major, R. T.: Jour. Amer. Chem. Soc., 1931, liii., 2662.
3. Miles, F. T., and Menzies, A. W. C.: Jour. Phys. Chem., 1933, xxxvii., 425.
4. Smyth, C. P., and Walls, W. S.: Jour. Amer. Chem. Soc., 1932, liv., 3830.
5. Knoefel, P. K., Guedel, A. E., and Leake, C. D.: Proc. Soc. Exper. Biol. and Med., 1931, xxix., 139.
6. Gelfan, S., and Bell, I. R.: Jour. Pharm. and Exper. Ther., 1933, xlvii., 1.
7. Goldschmidt, S., Ravdin, I. S., Muller, G. P., Johnston, C. G., and Ruigh, W. L.: Jour. Amer. Med. Assoc., 1934, ciï., 21.
8. Bourne, W.: THE LANCET, 1934, i., 566; also Jour. Canad. Med. Assoc., 1934, xxxi., 44.
9. Ashworth, H. K.: Brit. Med. Jour., 1932, i., 1123.

CLINICAL AND LABORATORY NOTES

AN UNUSUAL TYPE OF CHRONIC BUCCAL AND PERIANAL ULCERATION

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A schoolboy, aged 14, was admitted to the Hospital for Tropical Diseases, London, on April 23rd, 1934, under the care of Dr. N. Hamilton Fairley, complaining of recurrent ulceration of the mouth and perianal region. The case was so unusual that it appears worth recording in some detail.

History.—The patient had always lived in Rhodesia and came to England solely for the investigation and treatment of his condition. The only former illnesses were an acute appendicitis four years before and, shortly after this, dysentery. There was nothing of note in the family history.

Two years ago he first began to suffer from ulcers of the mouth, lips, and perianal region, and since then the condition had persisted intermittently. These ulcers broke out from time to time and lasted for from one to three weeks before disappearing. They were painless unless touched and those in the mouth were not affected by hot or cold fluids or by foodstuffs; the buccal ulcers never bled, but those of the perianal region did so occasionally. He felt quite well in himself and the appetite remained good, but the bowels tended to be constipated.

On arriving in England ten months previously he was admitted to one of the large London hospitals where a very full investigation was carried out, but no diagnosis was arrived at and all lines of treatment proved of little avail. During this investigation one of the perianal ulcers was removed by means of a diathermy knife and a section of it showed a chronic inflammation of a non-specific nature. The Wassermann and sigma reactions were negative as was also the Mantoux test. There were no specific organisms in the stools, but as a hæmolytic streptococcus was grown from his throat a vaccine of this was prepared. Radiography of the chest revealed nothing abnormal. One or two septic teeth were removed. After three months stay in hospital he was discharged; the perianal ulcers were then healed, while those in the mouth were clean and appeared to be healing.

Examination and progress.—On admission to the Hospital for Tropical Diseases the patient was found to be of spare build and to have rather pale facies, but quite well-coloured mucous membranes. Cyanosis of the fingernails and clubbing of the fingers were absent. There was some blepharitis of the lower eyelids, but he stated that he had suffered from this for many years and his two brothers were similarly affected. On the buccal aspect of the left cheek opposite the site of the second last molars there was an ulcer about 1¼ mm. in diameter, with greyish-yellow sloughing base and raised hard inflamed edges. A similar ulcer of smaller size was to be seen on the corresponding site of the right inner cheek. There was slight enlargement of the tonsillar glands, but no other glandular enlargement. In the left perianal region a deep ulcer with sloping edges and pale red base, exuding a seropurulent discharge, was present.

Both the knee- and ankle-jerks were exaggerated, but otherwise nothing abnormal was detected in the nervous system, while examination of the abdomen, chest, cardiovascular and genito-urinary systems revealed nothing abnormal. Digital examination of the rectum proved negative, while a sigmoidoscope passed 10 cm. revealed a healthy mucosa. A fractional test-meal showed a normal acid curve, and an opaque meal revealed no evidence of any organic lesion in the gastro-intestinal tract. The accessory nasal sinuses were found to be clear on clinical and X ray examination and a further radiogram of the chest was satisfactory. The Wassermann reaction was negative. The fæces were repeatedly negative for ova and protozoa. Swabs made from the ulcers showed many pus cells and organisms of various types, but no Vincent's spirochætes or Leishman-Donovan bodies were observed; cultures showed a growth of *Micrococcus catarrhalis*, streptococci, and Gram-negative bacilli of the Friedländer type. Later swabs revealed nothing further. Blood calcium = 10·8 mg. per 100 c.cm.; blood phosphorus = 2·5 mg. Per 100 c.cm.

Throughout the period in hospital and afterwards when he attended as an out-patient there was a definite leucocytosis varying from 12,000 to 37,000 per c.mm. with an increase in the granulocytes and a decrease in lymphocytes. The variation in the leucocyte count is shown in the accompanying Chart. The percentage of hæmoglobin and the red cell count were satisfactory throughout the investigation. While in hospital he ran a mild intermittent fever, the temperature rarely rising above 99·2° F., but on two occasions it rose to 100·2° F., on one occasion to 100·8° F., and one of these appeared to be associated with the

intravenous injection of a small dose of novarsenobenzol. There were periods of several consecutive days when there was no elevation of temperature. The pulse-rate varied between 72 and 120 per minute, but did not always correspond with the temperature.

The ulcer on the left cheek healed in about four days and that on the right in about ten days; these were followed by similar ulcers affecting the lips, fauces, and inner surfaces of the cheeks. Each appeared quite suddenly,

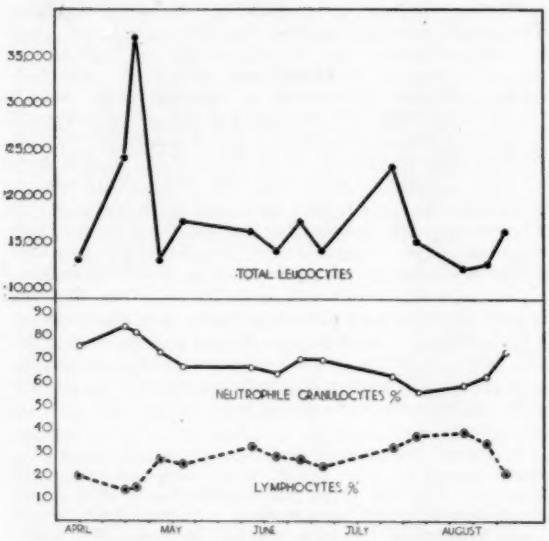


Chart showing the total leucocytes and the percentage of neutrophil granulocytes and lymphocytes.

lasted about a week to ten days and then healed. At no time was the mouth completely free from ulcers. The perianal ulcer was more intractable, but at the time of discharge from hospital (May 25th, 1934) was healing satisfactorily. For about three weeks afterwards there appeared to be an improvement in the patient's local and general condition associated with the administration of intramuscular injections of Campolon and reinforcement of the vitamin content of the diet. The mouth remained practically free from ulceration and there was no further perianal ulceration. This improvement however was transient and the condition returned as before. The buccal ulcers became exceedingly numerous and with each crop of ulcers the faucial pillars and posterior palatal arch were gradually being fenestrated although the lips and inner surfaces of the cheeks showed any loss of tissue. This erosion of the tissues was a new feature. The boy's general condition varied from week to week, being worse when the ulceration was severe, and the weight likewise varied. As there seemed to be no prospect of cure he was advised to return to Rhodesia where the climate appeared to be better for his general health.

Treatment.—The vitamin content of the diet was increased by the addition of Radio-malt, Marmite, halibut-liver oil, and fruit. Iron and other general tonics have been tried. Potassium iodide was administered internally and a small dose of novarsenobenzol given intravenously, but as the latter caused a slight rise of temperature it was not repeated. Weekly intramuscular injections of campolon were given in the out-patient department for many weeks and liver extract (Hepamult) prescribed to be taken by mouth. For a time this line of therapy seemed to meet with slight success. Another autogenous vaccine was then tried in increasing doses, but no improvement was observed. Numerous local applications including gentian violet (1 per cent. in water), Glauramine (1/20), weak carbolic and saline were applied, but again with little or no success. For the perianal ulceration eusol seemed to be more effective. General exposure to fresh air and sunlight were encouraged.

The interest of the case lies in the fact that it does not correspond with any classified type of ulcerative stomatitis. It appears to be akin to the recurrent ulcerative stomatitis of adults in that (1) the ulceration is recurrent; (2) it is not associated with any special modification of gastric secretion; and (3) apparently it is not due to any specific infection. It differs from the adult condition however in that the edges are raised and hard, and there is an associated recurrent ulceration of the perianal region.

Hurst [1] mentions an instance of severe recurrent ulcerative stomatitis associated with colitis in a girl aged 7 years who completely recovered when liver was added to the diet; but while a detailed description is not given one gathers that the clinical features corresponded to those of the adult condition. It will be observed that in association with the isolation of streptococci from the ulcers there has been an exceedingly high leucocytosis.

I am indebted to Dr. N. Hamilton Fairley for permission to publish the notes on this case.

JUVENILE CIRCUMCISION

A PLEA FOR A STANDARDISED TECHNIQUE

BY A. P. BERTWISTLE, F.R.C.S. Edin.

CIRCUMCISION is undoubtedly the oldest operation of which we possess accurate accounts. Though commonly considered peculiar to Semitic races, it was practised in Egypt to our certain knowledge in the fourteenth century B.C. It was also performed by the Babylonians and Ethiopians and by such widely separated peoples as the aborigines of New South Wales, Polynesia, and Brazil.

Modern Jews are operated upon with great skill and precision by the rabbis as follows:—

"The operator draws the foreskin slightly forwards, then grasps it just in front of the glans by drawing it through a slit in a silver guard . . . inclined slightly downwards and forwards to avoid cutting the frenum as much as possible and to slice off the prepuce in an oblique or quilled manner. The mucous membrane is torn open between the finger and thumb along the dorsum of the penis and turned back so as to be brought in contact with the cut surface of the skin. A piece of dry lint is twisted round the organ, in the sulcus behind the glans so as to keep back the mucous membrane and also to restrain hæmorrhage. This operation which is practised on the eighth day after birth is rarely attended by any ill consequences. I have, however, seen it in one case followed by a fatal erysipelas and have heard of another instance in which death occurred from hæmorrhage." [2]

In view of the antiquity of the operation and the success of the Jewish technique one would expect a standardised method of circumcision to have been evolved; instead of which each text-book gives a different one. Certainly the results are by no means uniformly good. Reoperation is not uncommonly called for because of cicatrisation of a foreskin left unduly long, and an objectionable lump in the neighbourhood of the frenum is often seen.

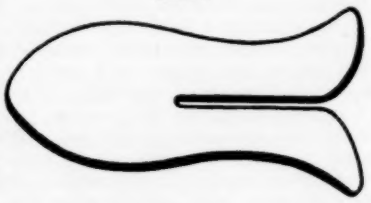
The procedure I shall now describe will be found simple and fraught with few risks. The instruments required are two pairs of Spencer Wells forceps, one pair of blunt-nosed scissors such as Mayo's, one pair of dissecting forceps, a needle, and a simple

[1] Hurst, A. F.: In Price's Text-book of the Practice of Medicine, London, 1933, p. 525.

[2] Erichsen: The Science and Art of Surgery, 1877, p. 932.

inexpensive instrument (obtainable from most instrument makers) resembling an army button-cleaning stick (Fig. 1). This consists of a sheet of metal provided with a longitudinal slit into which the prepuce is drawn, and it has the advantage over forceps that (1) there is no possibility of injury to the glans, (2) it adapts itself to the proper position for section, and (3) it does away with all bruising, thus reducing the chances of sepsis.

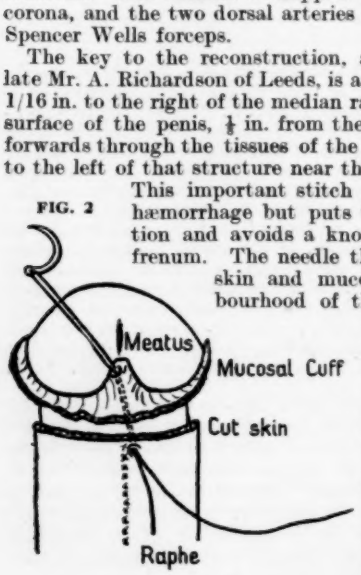
FIG. 1



After sterilisation of the skin with ether-soap and hydrarg. biniodide spirit the end of the foreskin is seized with Spencer Wells forceps and the circumcisor is slipped over the foreskin, keeping the closed end of the slit on the dorsum. The circumcisor is now pressed firmly backwards, when it will be found to take up the position of the coronal reflection—i.e., downwards and forwards—and the foreskin is cut off with scissors. It is important in children to remove enough of the prepuce, otherwise scarring may call for a second operation. The edge of the mucosal sheath, now exposed by retraction of the skin, is held up with forceps and the scissors are introduced (closed) as far as possible into the sac; they are then widely opened so as to separate mucosa from glans. A longitudinal cut is next made in the dorsum of the mucosa to within ¼ in. of the coronal reflection; each corner of the mucosa is held up with forceps and separated from the glans by gauze dissection until the line of smegma is reached and removed. The mucosa is snipped off ¼ in. from the corona, and the two dorsal arteries are clamped with Spencer Wells forceps.

The key to the reconstruction, as taught by the late Mr. A. Richardson of Leeds, is a stitch introduced 1/16 in. to the right of the median raphe on the under surface of the penis, ⅛ in. from the cut skin, passing forwards through the tissues of the frenum to emerge to the left of that structure near the meatus (Fig. 2). This important stitch not only controls hæmorrhage but puts the parts in position and avoids a knot of tissue at the frenum. The needle then transfixes the skin and mucosa in the neighbourhood of the dorsal arteries and the clamping forceps are thrown over the stitch so as to ligature the arteries. The same plan is adopted for any other bleeding-points, and thus the amount of catgut used, and accordingly the risk of sepsis, is minimised.

FIG. 2



Many use an ointment dressing because it can be removed without pain; but if the end of the penis is wrapped round with ribbon gauze, and tincture of benzoin is dropped on, all capillary hæmorrhage stops. Urinary contamination of the wound is prevented and the whole dressing can be removed with little trouble in a warm bath about the fifth day.

WEIL'S DISEASE IN AN ENGLISH CANAL-WORKER

By JOHN WOLSTENCROFT, M.R.C.P. Lond.

ASSISTANT HONORARY MEDICAL OFFICER, WEST HERTS HOSPITAL, HEMEL HEMPSTEAD

Schüffner [1] states that Weil's disease has now become a serious public health problem in Holland. The great majority of the Dutch cases have been infected through the canals, either by bathing in swimming-baths to which canal water is admitted, or by accidental immersion in canals.

Hamilton Fairley [2] has shown that Weil's disease is endemic amongst London sewer-workers, Gulland and Buchanan [3] reported an epidemic in coal-miners in East Lothian, and Davidson and others [4] have described an outbreak amongst fish-workers in Aberdeen; but although Manson-Bahr [5] in 1922 reported a case contracted through falling into the Thames—the first case recorded in Great Britain—no example of the disease acquired from an English canal has up to now been described. On the analogy of the Dutch experience one would expect, now that we know that the disease occurs in this country, that it would be found most commonly associated with canals. Such a case is here described.

The patient, a man aged 28 years, living in the village of Boxmoor, Herts, is one of the maintenance staff of a canal company. His duties were those of a general labourer. For the three weeks previous to the onset of his illness he had been working on a part of the canal which is infested with rats, and had been standing knee-deep in water and removing, with his bare hands, old submerged timber. There was no history of his having fallen into the canal, nor of association with dogs. On Sunday afternoon, Oct. 28th, 1934, he was suddenly seized with frontal headache and severe aching pains in the muscles and joints. On the following day he was examined at the surgery by his doctor, who found the temperature 100·8° F., pulse 110, unhurried respirations, the eyes markedly injected and "ferrety," the throat clear, and the tongue lightly furred.

He was sent home to bed, and on the next day, Oct. 30th, the temperature was 100·4° F., pulse 110, there were no physical signs in the chest or abdomen, but the headache and aching pains persisted, and he could not sleep. On the 31st his temperature was 99·4° F., there was slight conjunctival jaundice, the urine contained bile, and for the first time he complained of epigastric pains and sickness. There was rigidity all over the upper abdomen, especially in the epigastrium and right hypochondrium, and, except for a little water, he vomited everything that was given him. During the next three days the temperature and pulse remained normal, the jaundice deepened, the vomiting and upper abdominal pains continued, and the urine was scanty, deeply stained with bile and contained albumin. The patient had had no sleep since the illness began, he was much irritated by itching of the skin, and it was impossible for him to retain any medicine or nourishment other than a small amount of glucose, lemonade, and water. On the morning of Nov. 4th a hypodermic injection of morphia gr. ½ relieved the severe abdominal pain, which did not return during the remainder of the illness; the vomiting ceased also, and grs. 5 of Medinal at night gave six hours' sleep. His condition now began slowly to improve.

On Nov. 7th the patient was admitted to the West Herts Hospital for investigation; the abdominal rigidity had now disappeared, and the tender, enlarged liver could be felt two fingers below the costal margin; the spleen was not palpable. On the same day there appeared a few petechial hæmorrhages over the lower ribs on each side of the chest. There were no hæmorrhages elsewhere, the fundi showed nothing abnormal, the heart and lungs were clear, the temperature and pulse were normal. The jaundice now reached its maximum and was intense

and with an orange tint, the urine was deeply bile-coloured and contained albumin, acetone, casts, and red blood-cells; there was constipation—only one stool having been passed since the illness began, and this unfortunately was thrown away before it could be examined. On Nov. 9th three hæmorrhages, each somewhat smaller than a threepenny-piece, appeared—two on the abdomen and one on the right thigh. No other skin hæmorrhages occurred. On Nov. 10th he had a tarry stool, and two days later another.

After admission to hospital the patient's condition steadily improved, the jaundice and the itching slowly lessened, the appetite returned, the bowels became regular, and he had no complaints; he was not allowed out of bed. On Nov. 17th the liver was no longer palpable. On the 19th however he had a rigor, his temperature rose to 102° F., and he complained of pain over the loins and headache. The rise of temperature lasted six days, and now the spleen for the first time became palpable three fingers below the left costal margin and was soft and tender; the liver could not be felt. The jaundice did not deepen, and once the temperature became normal he felt none the worse for his relapse and his convalescence was thereafter uninterrupted, though the spleen remained palpable until Dec. 13th when he was discharged from hospital.

On Nov. 8th serum sent to Major H. C. Brown, of the Wellcome Bureau of Scientific Research, gave a strongly positive reaction by the adhesion test with *Leptospira icterohæmorrhagiæ*, but the urine examined at the Clinical Research Association did not show leptospira.

A blood count on the 11th showed :—

Red cells	5,100,000 per c.mm.	Polymorphs	77·5%
White cells	10,800 ,, ,,	Lymphocytes	14%
Hæmoglobin	93%	Eosinophils	0·5%
Colour-index	0·91	Hyalines	8%

No parasites were detected.

On the 28th a further search by Major Brown of the centrifuged urine did not reveal leptospira. On the same day serum was sent by air mail to Amsterdam to Prof. Schüffner, who very kindly tested it for agglutination with *Leptospira icterohæmorrhagiæ*. The serum was strongly positive, agglutinating leptospira in dilutions up to 1 in 30,000. The laboratory findings of Prof. Schüffner and Major Brown, to whom I am greatly indebted, fully confirm the diagnosis of Weil's disease.

REFERENCES

1. Schüffner, W.: Trans. Roy. Soc. Trop. Med. and Hyg., 1934, xxviii., 7.
2. Fairley, N. Hamilton: Brit. Med. Jour., 1934, ii., 10.
3. Gulland, G. L., and Buchanan, G.: Ibid., 1924, i., 313.
4. Davidson, L. S. P., et al: Ibid., 1934, ii., 1137.
5. Manson-Bahr, P., Wenyon, C. M., and Brown, H. C.: THE LANCET, 1922, ii., 1056.

GAGS AND TONGUE FORCEPS

THEIR USE AND ABUSE

BY W. STANLEY SYKES, M.B. Camb.

ANÆSTHETIST TO THE GENERAL INFIRMARY AND TO THE HOSPITAL FOR WOMEN AT LEEDS

STUDENTS who are learning the art of anæsthesia love to festoon themselves with gags and tongue forceps. This little affectation would be harmless enough if these instruments remained merely a symbolical decoration; but unfortunately they do not. The number of teeth damaged by gags and tongues lacerated by forceps must run into millions—and it is all quite unnecessary.

For anæsthetic purposes tongue forceps need *never* be used. For anæsthetic purposes gags need *never* be used (with one solitary exception—intubation for endotracheal methods). Note the qualification "for anæsthetic purposes." It is, of course, often necessary to open the mouth for the surgeon or the dentist in oral operations, and one may very occasionally have to pull out the tongue for the same reason, but apart from this the prohibition should be absolute.

To fulfil this non-traumatic ideal three conditions are essential: premedication to stop the secretion of mucus, oxygen must be at hand, and small-sized airways must be available. One or two Magill's tubes are desirable, though rarely necessary.

In an ether anæsthesia—no matter what method or sequence—once the patient is properly under and the jaw muscles relaxed an oral airway can be put in easily with the fingers and then there is no more trouble. It keeps the tongue out of the way far more efficiently than any forceps. Before this stage is reached, however, is the time when the novice is apt to use force. During induction, especially in lusty male adults, the jaw muscles become rigid, the teeth may be tightly clenched, and for these or other reasons the patient becomes cyanosed. The cyanosis deepens, whereupon the novice drops his apparatus in a panic and tries to force open the jaw. It is precisely at this moment that most damage can be done. The gag is difficult to insert and still more difficult to open when in position. Also the patient, not properly under in the first place, is rapidly coming round all the time, and so the rigidity gets worse and worse.

The correct procedure, of course, is to disregard the rigidity, go steadily on with the induction, and cut the vicious circle by delivering a slow stream of oxygen into the apparatus. However irregular and inefficient the breathing the colour is soon restored to a reassuring pink, and full and even anæsthesia can be attained in a few minutes. Then the airway can be attended to, and the flow of oxygen lessened or discontinued. In the very rare cases where this method is not sufficient, a Magill tube (soft rubber, well lubricated) can be passed through the nose and a clear airway is at once secured. No amount of rigidity can interfere with this manœuvre.

Briefly, then, if the mouth cannot be opened with the fingers, it is not yet time to insert an oral airway, and a gag ought not to be used. When it can, there is no need for a gag. And so the necessity for this instrument disappears altogether.

With the non-irritating gas anæsthetics an artificial airway is not required so often. Cyclopropane anæsthesia presents no difficulties in this respect. The percentage of oxygen given with it is so large (80–85 per cent.) that cyanosis does not occur during induction. If an airway is needed later (as a rule it is not), relaxation is sufficiently good to enable it to be inserted easily. With ethylene the same applies. Here again the oxygen percentage (15–20 per cent.) is sufficient to prevent cyanosis. Nitrous oxide and oxygen may present difficulties in odd cases, but the rigidity can usually be overcome by altering the mixture. In any case the facepiece cannot be removed for more than a few seconds without spoiling the anæsthesia, so that the airway must be inserted quickly. If this cannot be done the facepiece must be replaced for a few minutes and then another attempt made. But there is never time to use a gag. If several attempts fail a Magill's tube will solve the problem. (Gas-and-oxygen here means gas-and-oxygen, and not a disguised ether anæsthesia made to look impressive by the use of gas cylinders.) It is perhaps hardly necessary to add that, in a pure gas-and-oxygen anæsthesia the oxygen percentage is so low (7–10 per cent.) that

cyanosis is almost always present, except in anæmic patients, even when the patency of the airway is perfect. It is a non-obstructive cyanosis inherent in the method.

The harness used to hold the facepiece in position, though an excellent labour-saver, in some cases interferes with the airway by pulling back the jaw. Sometimes loosening it works wonders.

It is evident that the best airway is the one which is easiest and quickest to put in—namely, a small one. The length should not exceed four inches, and the external diameter five-eighths of an inch. This is big enough for anyone to breathe through, and larger sizes are quite unnecessary. The oval, metal and rubber Phillips type is the best. With it, unlike the all-metal pattern, there is no need to replace pharyngeal divots.

Some anæsthetists may argue that the above principles are theoretically good but practically unattainable. I can only say that they are strictly practical. I have used neither gag nor tongue forceps for anæsthetic purposes for many years.

HÆMATOCOLPOS SIMULATING ACUTE APPENDICITIS

BY IVOR DAVENPORT JONES, M.R.C.S. Eng.

LATE JUNIOR RESIDENT MEDICAL OFFICER, ST. ANDREW'S HOSPITAL, DOLLIS HILL, LONDON

IN the following case the symptoms of hæmatocolpos appeared at the early age of 12 years and closely resembled those of acute appendicitis. Indeed the only factor giving rise to doubt in the diagnosis of acute appendicitis was the temperature of 102° F., which appeared unduly high for so short a history.

The patient, a Jewess aged 12, was admitted to hospital complaining of acute abdominal pain, coming on six hours previously, and accompanied by nausea and vomiting. The temperature was 102° F. and the pulse-rate 120. She was found to be well developed for her age, with moderately formed breasts and hair on the pubes. The abdomen was markedly tender, particularly in the right iliac fossa, and guarding of the right rectus was present. Per rectum a soft tender mass was felt on the right side; no vaginal examination was made. The urine was normal.

The diagnosis of acute appendicitis was made and laparotomy performed. The appendix was found to be normal, and no free fluid was present in the abdomen; the omentum, however, was stained a chocolate colour, and a uterus of normal size was found superimposed upon a greatly distended vagina which nearly filled the pelvic cavity. The abdomen was immediately closed and the patient put in the lithotomy position. The vagina was found to be closed by a firm whitish membrane, in no way resembling the blue bulging membrane usually described. Upon incising this membrane a considerable quantity of tarry fluid was evacuated. The patient made an uninterrupted recovery.

Upon interrogation the child admitted to a somewhat similar attack of pain about a month previously of a much milder nature, but had no recollection of anything abnormal before that time.

My thanks are due to Mr. Acton Davis, emergency surgeon to St. Andrew's Hospital, for permission to publish this case.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF THERAPEUTICS AND PHARMACOLOGY

AT a meeting of this section held on Jan. 8th the chair was taken by Prof. J. H. BURN, the president, and a paper on the

Pharmacology and Therapeutics of Curare

was read by Dr. RANYARD WEST. He began by emphasising the fact that curare is not an entity but a mixture of watery extracts of a number of poisonous plants which differ in different areas and are not perhaps always the same in any given area. He outlined the history of the drug from the time of Sir Walter Raleigh, pointing out that observers in the eighteenth and nineteenth centuries had been aware that the varying actions of curare were dependent on different plant constituents, some of which paralysed the vaso-motor mechanism while others produced convulsions. Nor was the therapeutic use of curare a new thing; it had been used in France in the last half of the nineteenth century "to delay the fatal issue" in hydrophobia and also in tetanus, epilepsy, and chorea. The dosage had probably been too low in most cases and, although curarine had been isolated and used alone, no attempt seemed to have been made to standardise the preparations or to obtain curarine in quantity. Boehm, who had isolated curarine, had also prepared curine. There were few references to it in the English literature, although Messrs. Savory and Moore had supplied it in brown pellets for use in tetanus cases in the Boer War.

Dr. West had, he said, coöperated with Prof. H. Hartridge in 1930 in administering curare to dogs suffering from parathyroid tetany. The violent muscular spasms had been relieved in doses which failed to paralyse, and in consequence the drug had been tried in chronic nervous diseases where muscular rigidity was a predominant symptom. The results had been irregular, but in the best cases there had been an encouraging degree of selective removal of rigidity without any effect on voluntary power. This removal of rigidity had been given the name of "lissive" action.

The various constituents of curare could best be classified according to their actions. A sine qua non was the power of paralysing the frog, showing an action distal to the motor nerve. Certain curares showed a convulsant action strongly resembling that of strychnine. Generally speaking, curare left the respiratory mechanism undamaged until a severe degree of paralysis of limb muscles had set in. Certain animals, however, especially the rat and mouse, showed early respiratory embarrassment or a sudden onset of embarrassed respiration in a partially paralysed animal. This was one of the reasons for caution in the use of curarine in the human subject. A much more definite respiratory action, however, was difficulty in inspiration in a non-paralysed animal. This was especially seen in the dog and was probably due to bronchial spasm. This peculiar and dramatic effect was only found in curares which contained a convulsant. The lissive action meant a selective removal of parathyroid tetany, without weakening, in dogs, or the selective removal of chronic pathological rigidities, without diminution of voluntary power, in man. Dr. West described the many sources from which he had obtained specimens of curare in an attempt to find out whether there was any fixed geographical origin

for the lissive samples. The various samples had also been investigated chemically, and a number of constituents isolated, among them the first crystalline specimen of pure tubo-curarine.

Tubo-curarine killed frogs by a classical peripheral paralysis. Sub-paralytic doses seemed to have some degree of central depressing action, but this was not found in rats which were killed in the same way. The action in dogs was purely peripheral, and there was no trace of lissive power. It had been given to a case of spastic paraplegia due to disseminated sclerosis; doses of 10 to 20 mg. given subcutaneously caused slight dizziness followed by some blurring of vision, like a film over the eyes, slight frontal headache, and a sensation of heat and flushing. From five minutes to half an hour after the injection there was slight ptosis but no other sign of muscular weakness. The blood pressure fell slightly, but the pulse-rate remained unchanged. The strong flexion spasm of the legs became a little less rigid, but walking was not materially improved. With 20 mg. these symptoms and signs were increased and the patient could put the right leg to the ground, but was too dizzy to walk. All symptoms had disappeared at the end of 50 minutes. With repeated dosage the patient suffered less from dizziness and was less spastic. With 50 mg. well-marked symptoms of poisoning appeared; ptosis prevented the patient from opening her eyes, she articulated very badly, and could not swallow or raise her head. These symptoms were confirmed in other cases. Tubo-curarine, therefore, might relax spastic muscles sufficiently to enable physical treatment to be more effective, but essentially it only relaxed as it paralysed, and was not so good as a good sample of curare.

From the same specimen of curare which yielded this curarine, two other fractions had been obtained and examined; a curine and a principle which differed in no way from the curarine. Hauschild had studied curine and thought that it acted on the exciting or conducting mechanism of the heart. Dr. West said he had been struck by the fact that small doses of curine in the frog produced marked central nervous depression with fibrillary twitches of muscles and nothing else, the action lasting for at least six hours after the injection of 1 to 3 mg. Small mice, with three times this dose, produced marked sluggishness together with tremors starting in the small muscles of the feet and amounting almost to convulsions, and definite symptoms of weakness of the limb muscles; the drug showed a strong tendency to kill by selective respiratory action.

Dr. West then showed slides illustrating poisonous plants which had been sent to him from curare-producing areas in British Guiana. *Strychnos cogens* had not been seen for many years, but was a traditional ingredient of Macusi curare and of the "cumarawa" of Esmeralda. *S. pedunculata* was very rare. In the samples of *S. mitscherlichii* and *S. melinoniana* there had been little or no alkaloids. *S. erichsonii* had a strychnine-like convulsant action. *Guettarda acreana*, though rich in alkaloid, had only a mild central depressant action in frogs and no action at all when given to dogs in fairly large doses. The alkaloid had only been isolated from *S. toxifera*, crude extracts of which showed a curariform action without central depression or convulsions, but with slight lissive action. Curarine seemed to be stronger in its action than tubo-curarine; in cases of Parkinsonism or spastic paraplegia there seemed to be no margin between the dose lessening rigidity and that causing weakness. Its therapeutic uses would probably remain very limited. *S. diaboli*, collected on the Essequibo River, had been found poor in alkaloidal content, but its Indian name of "black devil-doer" suggested that the active principle might be found elsewhere than in the bark, which was all that had been sent over. The crude extracts contained a centrally acting nervous depressant stronger than any other that had been described. Frogs under its influence would lie for hours on their backs inert, though capable of full activity on stimulation. Rats were made sleepy, though they ultimately died by respiratory failure. Dogs stood large quantities, and violent tonic and clonic parathyroid tetany might be removed. There was no rise in serum calcium. This principle, or one from a similar plant, might appear occasionally in curare samples and thus account for their inconstant lissive action. Further experiments were in progress.

Thus of five different strychnos specimens from British Guiana, one paralysed, one convulsed, one had primarily a central nervous action, and two appeared to be non-toxic. It would be better therefore to speak of the curares rather than of curare.

DISCUSSION

Dr. H. KING said that the kernel of interest from the chemical side was the classification and isolation of active principles. Boehm's work was still fundamental. Three absolutely distinct kinds of curare came from two natural orders of plants.

Dr. LESLIE COLE (Cambridge) described his clinical experience with curare in three severe cases of tetanus.[1] The potency of the sample, which had moderate "lissive" properties, had been tested biologically, and it had been shown that in dogs there was a considerable difference between the dose required to produce weakness of the voluntary muscles and the dose required to paralyse the respiratory muscles. He began by defining "incubation period" as the time from the occurrence of the wound to the first symptom of the disease, and the "period of onset" as the time from the appearance of the first symptom to the appearance of the first regular reflex spasm. In his first case the incubation period was 7 days and the period of onset 2. In all 256 mg. of curare was given, and though this was the most severe case of tetanus Dr. Cole had seen the patient made a complete recovery. In the second case—that of a child aged seven—the incubation period was 2 days and the period of onset 18 hours. A total of 45 mg. of curare was given in forty minutes in three injections, and though the patient died the case clearly demonstrated control of reflex excitability and reflex spasm by the drug. In the third case (incubation period 4 days; period of onset 3 days) 224 mg. of curare was given in fifteen hours, and the patient was apparently making a good recovery when lobar pneumonia developed and he died. These cases, Dr. Cole said, showed that curare could lessen the reflex spasms and rigidity of tetanus, and with the sample used this effect could be obtained without causing a complete paralysis of the voluntary muscles or embarrassing respiration. But until the drug had been standardised more accurately the treatment was experimental and should be reserved for patients who would certainly die without further assistance. His experience suggested that where the incubation period was 6 days or less and the period of onset 2 days or less, or where the incubation period and period of onset together amounted to 8 days or less, the patient would almost certainly die if

[1] The first two of them have been reported in THE LANCET, 1934, ii., 475.

treated by the ordinary methods; and in cases of this type it was justifiable to use curare or its derivatives. He thought it possible that curare, or certain of its alkaloids other than curarine, might do more than pure curarine to control the reflex spasms of tetanus, which were the cause of the patient's exhaustion.

Dr. E. STEPHENS said he had examined the resins and germs left behind after extraction of the alkaloid, and had been led to hope that the lissive element might be found in them. Its action was very similar to that of picrotoxin. The use of curare on raw surfaces had been suggested in a mid-nineteenth century edition of the British Pharmacopœia, but its muscle action had been ignored.

Sir. HENRY DALE asked whether the aim in treating tetanus was to paralyse the patient by classical curare action and keep him alive by artificial respiration, or to find some new drug modifying the central intoxication. Was the lissive action a central or peripheral effect? He thought the action would probably prove to be at the synapse.

Prof. H. HARTRIDGE said that there was a lissive substance and that substance was what was wanted therapeutically. More than one sample had been obtained with this effect, but apparently similar samples did not all have it. Possibly it got in by mistake. His theory was that the action was peripheral; that the spasms affected only certain fibres of the muscle, not all of it. Those fibres which were in spasm would be fatigued; possibly the lissive action was a selective one on these fatigued fibres only, leaving the other fibres untouched to produce voluntary movements.

Dr. WEST replied that the action of curarine should be studied, to see if it had a selective action, by repeating the work of Bremer and Lady Briscoe on this aspect of the action of curare. If curarine proved to have no selective action, then there must be a separate lissive principle, which might act either centrally or peripherally. The immediate objective in the treatment of tetanus should be to see whether curarine was valuable, regardless of the possibility of a second and possibly superior substance.

MIDLAND OBSTETRICAL SOCIETY

AT a meeting of this society on Dec. 10th, with Dr. C. E. PURSLOW, the president, in the chair, a note on

Post-partum Hæmorrhage

was read by Mr. WENTWORTH TAYLOR. Commenting on the text-book classification of such hæmorrhage into "atonic" and "traumatic" varieties, he pointed out that during a typical labour the uterus pauses on three occasions: first, when the membranes rupture; secondly, when the child's head passes through the cervix on to the perineum; and thirdly, after the birth of the child. These pauses are periods of veiled activity during which the cavity becomes accommodated to its diminished contents, and they are preparatory to fresh expulsive efforts. If atony of the uterus ever succeeded the birth of the child, the placenta would remain attached to the uterine wall; but in actual fact a fully adherent placenta is a rare phenomenon, having a pathology of its own. Knowledge of the manner of placental separation has greatly increased since Cæsarean section came to be employed with safety, and it is now beyond question that separation begins with the birth pain, or the pain which immediately follows. For its completion the retroplacental hæmatoma seems to be mainly responsible, and if an active controlling hand placed on the fundus after delivery disperses the retroplacental hæmatoma before its work is done, and before the uterine cavity has much diminished in size, the consequence will be free hæmorrhage, and sooner or later the patient will faint. Her uterus *then* passes into a condition of atony like the rest of her body, from want of oxygen; and she is also left with a retained placenta. If such a concept is true, it would appear that atony of the uterus is secondary to a loss of blood which ought not to have occurred at all. If it were taught that atony of the uterus is *never* primary, and that when atony develops it is a confession of neglect, post-partum hæmorrhage (as literally defined) might become far less common.

When a definition of post-partum hæmorrhage was originally attempted, obstetricians were well aware that women differed enormously in the quantity of blood they could lose before symptoms of collapse supervened. In consequence, they defined post-partum hæmorrhage as an amount sufficient to cause symptoms of collapse. This brings up the question whether there is some factor, other than the actual loss, which might contribute to the collapse syndrome, especially when hæmorrhage has not been excessive.

In cases where manual removal of the placenta is necessary, it is the common experience to find the placenta already largely detached, with only a few cotyledons still holding on. May not the patient's condition depend on the degree of shock rather than the amount of hæmorrhage?

"I put it to you," said Mr. Taylor, "that separation of the placenta in whole, or in part, is very rapidly followed by the production of histamine, or depressor substances allied to it. When the manner of placental expulsion is normal, and the placenta enters the vagina after 15–20 minutes, nothing untoward happens. When, however, separation is but partial, and contact of the separated cotyledons with the highly absorptive sinuses of the uterus is kept up, then a major fall in blood pressure takes place. This fall has nature's desired effect of stopping further bleeding on the 'grand scale,' but no improvement in the patient's condition is likely until the placenta has been expelled."

These considerations concerning the part played by a retained placenta in causing a fall of blood pressure apply equally to abortion, miscarriage, and ectopic pregnancies, and form a final plea for the performance of Cæsarean section in cases of central placenta prævia, where treatment by bringing down a leg often means that damaged tissue undergoing early post-mortem changes is kept for some time in close apposition with the maternal sinuses.

In conclusion, Mr. Taylor urged that if *any* anæsthetic is given for an operative delivery and laceration of the perineum results, the perineal tear must be sutured immediately after the cord is ligatured. Blood from torn perineal vessels mostly found its way back into the posterior fornix of the vagina, and a gush of blood would sooner or later appear, for which the anæsthetic was liable to be blamed. From now on, the advent of atony proceeded apace; but the atonic condition of the uterus was the result of neglect to suture the perineum, and not of giving chloroform.

Mr. C. D. LOCHRANE did not think Mr. Taylor's explanation universally applicable; he described a case of his own in which there was severe shock after a normal labour, yet the patient recovered after 48 hours, although the placenta remained in

utero.—Prof. BECKWITH WHITEHOUSE thought that the theory might explain the profound shock seen in some cases of placenta prævia, particularly of the central type with extensive separation. In such cases his preference was for Cæsarean section.—Mr. P. J. GANNER held that Cæsarean section was unjustifiable before the thirty-fourth week, for before this time version was easy and the results equally good so far as the mother was concerned. Many of these cases showed little shock, although the placenta was extensively detached: he maintained that after the thirty-fourth week Cæsarean hysterectomy was often justifiable, especially in a multipara.—Mr. MASLEN JONES said he had seen fatal shock without any placental detachment.

Mr. TAYLOR, in reply, said that a placenta still completely attached would not cause hæmorrhage or shock; this usually followed attempted expression with partial separation. He advised Cæsarean section for central placenta prævia irrespective of the stage of pregnancy reached, but thought that hysterectomy was seldom justified.

Gynæcological Cases

Prof. WHITEHOUSE showed the following specimens:—

Cystic uterus with carcinoma of cervix: from a 10-para, aged 44. This was treated with a preliminary dose of radium by the Paris technique, the uterus being removed by pan-hysterectomy at a later date; it was distended by a large cyst containing clear fluid, the wall being very thinned in places.—Prof. Whitehouse said that providing the hysterectomy was done within eight weeks of the radium application there was no difficulty from excessive scarring round the cervix which might cause trouble if the operation was postponed to a later date.

Sarcoma of uterus with a good deal of fatty degeneration in the tumour which was originally thought to be a lipomyoma.—In discussing the effect of lead on these tumours Mr. LOCHRANE said he had seen uniformly bad results from it, but Prof. WHITEHOUSE said he had seen an apparent cure of a fibrosarcoma by lead; a cure, however, was difficult to define as he had a case of sarcoma botryoides which recurred after 25 years; the recurrence was treated with Coley's fluid with apparent success.

He also showed a Krukenberg tumour of ovary and a large fibroid in a nullipara, aged 25.

Mr. MASLEN JONES showed a specimen of *hæmatometra with corporeal carcinoma*. He discussed whether the carcinoma was primary or secondary to the irritation of a collection of blood and pus in the uterus; if secondary it would be necessary in cases of apparently uncomplicated pyometra to adopt more drastic treatment than drainage.

Mr. GANNER described a case of carcinoma of cervix with procidentia in an 8-para, aged 63, and a case of myxoma of ovary in an unmarried girl of 22, whose chief symptom was amenorrhœa. The tumour appeared to be an extensive myxomatous degeneration in a fibroma, pure myxoma of the ovary being unknown.—Mr. G. F. KEATINGE showed slides from an early case of epithelioma adenoides cysticum of the vulva.

ROYAL ACADEMY OF MEDICINE IN IRELAND

AT a meeting of the section of medicine held on Dec. 7th with Prof. V. M. SYNGE, the president, in the chair, a paper on the

Diagnosis of Abscess of the Brain

was read by Dr. R. H. MICKS. In his experience, he said, there were three common mistakes in the diagnosis of cerebral abscess. 1. Complete oversight because the symptoms were slight and the progress slow. 2. Abscess simulating meningitis. Clinically the case resembled acute meningitis and the fluid was frequently turbid and under tension. If it contained both white cells and organisms the case was obviously one of meningitis, but if there were cells alone and no organisms it was possible that the patient had a brain abscess alone without meningitis. 3. "Otitic hydrocephalus." This syndrome was first clearly defined by Symonds, who gave it this unsatisfactory name. It was easy to distinguish from meningitis by two signs. First there was always a very high papillœdema, and secondly the cerebro-spinal fluid was clear and the cell count never above normal. It might last for some months. Two popular fallacies, said Dr. Micks, contributed to missing the diagnosis of brain abscess. The first was the notion that papillœdema is a common sign in this condition, and the second the notion that an otologist can by examining the ear say that an otitis is too slight to have caused a brain abscess. Localisation of the abscess was often very difficult; for instance, in cerebellar abscess destroying one whole lobe arm-deviation and mispointing might be absent. Gross focal signs were very rare indeed.

The PRESIDENT agreed with Dr. Micks about the difficulty of diagnosis.

Dr. H. LEE PARKER said that the chief problem was to find out where the abscess started. The infection might turn to a rapidly spreading meningitis, or an encapsulated abscess might easily be mistaken for a tumour of the brain.

Dr. W. R. F. COLLIS mentioned a case he had recently seen in a child in which the cerebro-spinal fluid was under very great tension. Post mortem an otitis was found with infection that had passed forwards into the middle fossa and had then burst outwards through the cranial bones. A small brain abscess was just beginning to form.

Mr. A. A. MCCONNELL said that the cases he saw in which the diagnosis was questionable were those in which suggestive cerebral symptoms developed soon after operation. He thought that these cases were particularly difficult. He would like to know what symptoms might arise after a septic mastoid operation. If there were published any description of the ordinary course that a mastoid operation should take, and of the symptoms that one should expect from it, it might make the diagnosis of brain abscess easier. Dr. Micks had said in his paper that he did not think it was of great importance whether the abscess was ever clearly localised or not. He personally did not agree; he thought it essential to localise the abscess before anything was done. Operation should not be attempted unless it was absolutely necessary, and he considered that the simplest thing was to do a ventricular puncture. By this means it was possible to find out which approach to the brain was indicated, and it was much easier for the patient to have a ventricular puncture than to have the brain explored from the two different sides.

Prof. L. ABRAHAMSON referred to a case which had been admitted to the Hardwicke Hospital under his care as one of hysteria. It was clear, he said, that for some time before admission the signs had been so vague that diagnosis was impossible.

Dr. G. C. DOCKERAY described a case of aleukæmic lymphatic leukæmia; and cases of congenital heart disease were shown by Dr. C. J. MURPHY, and by Dr. DOROTHY PRICE and Dr. GEOFFREY THOMPSON.

REVIEWS AND NOTICES OF BOOKS

Some Notable Epidemics

By H. HAROLD SCOTT, M.D., F.R.C.P.Lond., D.P.H., D.T.M. & H. Camb., F.R.S.E., Assistant Director, Bureau of Hygiene and Tropical Diseases. London: Edward Arnold and Co. 1934. Pp. 272. 12*s.* 6*d.*

THE story of many epidemics has, as Dr. Scott points out, all the fascination of the detective story—and the skill with which some of our epidemiological forbears convicted the prisoner in the dock (usually the water company or the dairy) is here concisely exposed. The public health worker who follows the logical development of the incidents here recalled will find not only interest but stimulation, because familiarity with the methods of attack applied in the past will make his path clearer when it becomes his own duty to investigate an outbreak of disease. The stumbling-block in his way has hitherto lain in the fact that some of the original reports are scattered in obscure volumes on the remoter shelves of libraries. Dr. Scott's excellently selected "anthology" will allow the public health worker no excuse for ignorance of the course of the more important epidemics recorded in this country since the middle of the nineteenth century. He starts with the famous cholera epidemic of 1854, the "Broad Street Pump" outbreak, which has been described as probably the most terrible which ever occurred in this kingdom, passes next to the classical outbreaks of water-borne enteric fever (Blackburn 1881, Worthing 1893, Maidstone 1897, Lincoln 1904–05, Bolton-upon Dearne 1921), and then to the milk-borne outbreaks of the same disease or its colleagues (St. Marylebone 1873, Llandudno and Conway 1908–09, Chorley 1924, Hertfordshire 1927). With milk thus arraigned and found guilty, he turns to the part played by it in epidemics of diphtheria and scarlet fever (London and suburbs 1913–14, Halifax and Durham 1880, St. Giles and St. Pancras 1882, Hendon 1885, Wimbledon and Merton 1886–87), and, coming to more recent history, in the very large epidemic of sore-throat in Brighton and Hove 1929. Food poisoning is illustrated in two outbreaks (Welbeck 1880, Nottingham 1881), oyster-borne enteric fever in another two (Winchester and Southampton 1902), and finally attention is paid to the series of small obscure epidemics in Aberdeen between 1919 and 1926 and to three Sonne dysentery outbreaks (Aberdeen 1925–26, St. Andrews 1926, St. Pancras and Holborn 1933).

Dr. Scott marshalls his facts from the original reports and the chain of evidence skilfully, and supplies incidental information which makes the accounts delightful to read and easy to remember. For instance, a crucial experiment in the St. Marylebone outbreak of typhoid reads like a tract that took the wrong turning. "In the same family Nemesis visited the butler 'who had beer money but saved it' and drank the milk instead; he contracted the infection." We can only detect one misquotation from the "classics" in a book that opens with five quotations from the Latin and one from the Greek. Discussing an outbreak of paratyphoid fever due to ice-cream Dr. Scott says that the actual vendor and her employees wisely were content to follow the Brer Rabbit policy. It was the Tar Baby that showed a blameless reticence.

This book may well, as Prof. Jameson suggests, lead to a closer study of the older reports upon which it is based and of others excluded by lack of space. A reader who lacks time or opportunity to go further will have the more reason to be grateful for a carefully compiled and interesting volume.

Illustrations of Regional Anatomy

By E. B. JAMIESON, M.D., Senior Demonstrator and Lecturer, Anatomy Department, University of Edinburgh. Edinburgh: E. and S. Livingstone. 1934. Five Sections. 203 plates. 30*s.*

THIS is a novelty in pictorial issues, and a pleasant one. Dr. Jamieson has produced, after much pressure from his former students, copies of the diagrams he has employed for years in his lectures. There is always an interest in passing in review the implements of another's activities, especially where that other has so long a record of successful teaching. The five sections comprise head and neck, central nervous system, abdomen, pelvis, and thorax, with variations in price according to the number of plates in each: approximately at the rate of a penny uncoloured and twopence coloured. More than two-thirds of the number are coloured, and the whole series gives excellent value for a very small cost. We expect that there will be considerable demand for these illustrations, which allow of removal and replacement in their special bindings. All concerned in their production deserve congratulation on the enterprise.

The Modern Treatment of Syphilis

By JOSEPH EARLE MOORE, M.D., Physician-in-charge Syphilis Division of the Medical Clinic and Assistant Visiting Physician, the Johns Hopkins Hospital, Baltimore. London: Baillière, Tindall and Cox. Pp. 535. 22*s.* 6*d.*

THE author of this imposing volume takes up the position that although the present treatment of syphilis is in many respects unsatisfactory, it is nevertheless worth while to describe the most reliable methods now in vogue and to assess the attainable by their use. His conclusions have a broader basis than his personal experience, for he has drawn extensively upon the contributions of a "coöperative clinical group," which for several years has been engaged in an inquiry into the results of treatment of the different types of syphilitic infection. This group comprises the directors of the syphilis clinics at the Mayo Clinic, at the universities of Pennsylvania, Michigan, the Western Reserve, and Johns Hopkins, and representatives of the U.S. Public Health Service. The material from all the clinics has been pooled, studied statistically with the aid of the U.S. Public Health Service, and the conclusions have been agreed upon by all members of the Group.

This book is divided up into some 32 chapters, of which the first few are devoted to the biology of syphilis in relation to treatment; the prognosis of syphilis, untreated and treated; and the therapeutic problem.

Dr. Moore insists on the importance of treating the patient as a human being and not of treating the disease itself as an entity apart from the patient. The relation of the expert in syphilotherapy to the general practitioner who may have to treat the patient is studied, with some helpful suggestions. In the section on chemotherapy the description of the

arsenical compounds is particularly valuable, and the chapter devoted to the reactions produced by the arsphenamine and tryparsamide preparations is illuminating. In common with many American syphilologists, he prefers arsphenamine ("606") to neoarsphenamine ("914") in the treatment of early syphilis, and sulpharsphenamine is not recommended, except for children, owing to the risk of dermatitis. Dr. Moore holds sodium thiosulphate to be worthless in the treatment of dermatitis. Of the bismuth preparations the author definitely favours the insoluble and his personal preference is for the salicylate. He makes no mention of bismuth oxychloride which has a considerable vogue in this country and on the continent. Reliance must not be placed on bismuth alone in the treatment of early syphilis; to the fact that a number of French clinicians have used it exclusively has been attributed the reputed recent rise in the general incidence of syphilis in France, as opposed to the rest of Europe. For the small number of cases which are considered suitable for treatment with mercury, the author prefers inunction to any other form of administration. Intravenous injections of sodium iodide are not recommended, but 2 to 4 g. may be given three times a day by the mouth. In early syphilis the aim of treatment is complete eradication of the infection and, provided the treatment outlined by the author is properly carried out, he believes that a "cure" should result in 90 to 95 per cent. of the cases. In late syphilis, on the other hand, the arrest of the progress of the disease and amelioration of the symptoms is the best that can be accomplished. For early syphilis Dr. Moore recommends at the start full doses of arsphenamine ("606") together with intramuscular injections of insoluble bismuth. After about three weeks of such combined treatment, smaller doses of "606" are given at weekly intervals for five or six weeks with an alternating course of bismuth and iodides (or mercury and iodides). He prefers the "continuous" treatment of early syphilis to the "intermittent combined" treatment, which is in favour in this country.

About half the book is taken up with the consideration and treatment of asymptomatic neurosyphilis, latent and late syphilis—benign, cardiovascular, visceral, ocular, and neurosyphilis—and the antenatal prevention of congenital syphilis. These chapters are particularly valuable. Dr. Moore holds that, from the point of view of the central nervous system, rest periods between courses of treatment probably do no harm; in late and latent syphilis since "cure" is not hoped for neoarsphenamine ("914") can be used in preference to arsphenamine. For the treatment of primary optic atrophy he is a strong supporter of combined intravenous and intracisternal therapy, the latter with arsphenaminised serum. In 54 per cent. of the patients so treated a favourable result was obtained—namely, arrest of the progressive rapid visual failure. Patients with interstitial keratitis were almost without exception benefited by thorough treatment with arsphenamine and bismuth or mercury, in conjunction with potassium iodide. Furthermore, such treatment started while the keratitis involved only one eye was successful in limiting the disease to the affected eye in 60 out of 62 patients so treated.

For the treatment of neurosyphilis the procedure depends upon the age of the condition. In early neurosyphilis a year of arsphenamine and heavy metal is recommended, followed if necessary by tryparsamide, malaria, and subdural treatment. In general paralysis the malarial treatment should as a rule be started sooner than in early neurosyphilis, and in this condition Dr. Moore questions the value of subdural treatment with arsphenaminised serum. American practice appears to favour the induction of malaria by the injection of parasite-containing blood from another patient, rather than by the use of infected mosquitoes. The problem of Wassermann-fastness is ably discussed and although its significance for the patient's future is still uncertain, Dr. Moore's view is that if the patient has received the recommended treatment for the particular organs involved "it makes no difference to patient or physician whether the Wassermann is positive or negative." On the treatment of congenital syphilis, the recommendations are based upon the results obtained in the pædiatric department of the Johns Hopkins Hospital and upon a study of the literature, especially Jeans and Cooke's monograph. Sulpharsphenamine in alternation with bismuth or mercury without rest periods is the treatment advised; this is contrary to the general usage in this country where periods of rest are given. The author appears to be unduly apprehensive of the use of tryparsamide in children.

This practical book concludes with a useful chapter on the interpretation of serological tests and one on syphilis and marriage.

A Pathology of the Eye

By EUGENE WOLFF, M.B., B.S. Lond., F.R.C.S. Eng., Ophthalmic Surgeon, Royal Northern Hospital and Western Ophthalmic Hospital; Pathologist and Lecturer in Anatomy to the Royal Westminster Ophthalmic Hospital, &c. With 124 illustrations. London: H. K. Lewis and Co., Ltd. 1934. Pp. 284. 28*s*.

THE chief authorities on the pathology of the eye all recognise two tasks—first to display the changes from the normal, both macroscopic and microscopic, brought about by various abnormal states; secondly to discuss the causes of these changes. The arrangement of this book follows tradition by dealing with each anatomical region in succession. The illustrations are especially good. For normal conditions readers are referred to a book on "Anatomy of the Eye and Orbit" by the same author, but several of the illustrations to that work are here reproduced. There are besides very many illustrations from the author's original preparations of pathological specimens, all well chosen and uniformly clear. Among them pictures of epithelial hyperplasia of the conjunctiva, malignant papilloma of the limbus, xanthelasma, angioma of the eyelid, rodent ulcer of eyelid are excellent; and the two stages of a case of choroido-retinitis are vividly portrayed; the first in which the pigment is seen breaking through the external limiting membrane and collecting round a retinal vessel, and the second, in which the corresponding patch of retina and choroid are totally destroyed. There is a typical picture of the choroid in sympathetic ophthalmitis and a coloured specimen, recently shown by the author at the Royal Society of Medicine, of siderosis bulbi, in which the aqueous, the capsule of the lens, the iris, and the retina itself are seen to have taken a blue stain indicating the presence of a compound of iron. There are several illustrations from sections of all the usual varieties of tumour.

The text is well arranged and shows a good deal of original thinking. Speaking of the vulnerability of the macula in connexion with papillœdema and with some cases of irido-cyclitis, the author shows the connexion between œdema and the loose structure of

Henle's fibre layer of the retina. The structural similarity of the choroiditis of sympathetic ophthalmia to tubercle has led J. Meller and the Viennese school to regard them as identical, but Mr. Wolff objects that sympathetic ophthalmia never produces caseation.

In a final chapter general pathology is summarised with special reference to the eye. The absence of an appendix on laboratory methods may be regretted, but the bibliography giving references to numerous standard works and a large number of monographs will be found very useful.

The Operative Treatment of Fractures of the Femoral Neck

By SVEN JOHANSSON, M.D., Surgeon-in-Chief, Allmänna och Sahlgrenska Sjukhuset, Göteborg, Sweden. Copenhagen: Levin and Munksgaards Forlag. 1934. Pp. 148. 12*s*.

THIS work, while dealing chiefly with treatment of fractures of the neck of the femur by a particular method, contains also a useful summary of recent observations on the process of healing, the secondary changes occurring in the hip-joint, and radiological technique. The classification followed is that recommended by Faltin. The results obtained by non-operative methods are discussed, and this leads the author to his conclusion that, as these methods are not reliable in more than about 50 per cent. of cases, operative procedures are justified. A detailed account is given of the method used by the author in 50 cases, with a careful history of each one of the cases and a reproduction of the radiograms. The principles of Dr. Johansson's method of treatment may be briefly summarised under three heads: (*a*) The fracture is reduced by abduction, extension, and internal rotation, as practised by Whitman, Lorenz, and Lofberg. (*b*) The fractured ends are impacted into one another as recommended by Cotton. (*c*) Fixation of the reduced fracture is obtained by insertion of a Smith-Petersen nail through the neck of the bone, by a method referred to by the author as "extra-articular osteosynthesis." The difficulty in the insertion of the Smith-Petersen nail has always been to ensure its introduction in the correct axis without resort to the formidable operation of open exposure of the head and neck of the bone. Johansson overcomes the difficulty by first inserting a wire of the Kirschner type, and threading over this a hollow nail. This method is essentially the same as those described by Thomas King and B. H. Burns and summarised in this journal a few months ago (THE LANCET, 1934, i., 1321). Johannson has, however, developed a technique of his own for the accurate insertion of the guide wire, indicating the relation of the head of the bone to the greater trochanter by marks applied with plaster to the skin, rotating the limb inwards to bring the axis of the femoral neck parallel to the horizontal plane of the table, and using a specially designed "alignment apparatus" for insertion of the wire. The results recorded show that in only one case was the method a failure. Five patients died; osseous union was obtained in 40 of the remaining 45. To guarantee a good result, attention is particularly directed to three points: "Do not forget in the reposition by Whitman's method to abduct and extend fully before you rotate inwards. Take careful lateral radiograms. Be careful about the length of the nail, so that it is neither too long or too short."

The monograph gives a clear and interesting account of its subject, though it contains some curiously un-English phrases, and is rather marred by the use of such words as "diaphysical" (p. 9), "necrotize" (p. 20), "spongious" (p. 39). Attention to British idiom in future editions would enhance pleasure in reading a work which is otherwise of a scholarly nature.

Statistical Methods for Research Workers

Fifth edition. By R. A. FISHER, Sc.D., F.R.S., Galton Professor, University of London. Edinburgh and London: Oliver and Boyd. 1934. Pp. 319. 15*s*.

FIVE editions in nine years (during which several new statistical text-books have appeared) is evidence that Prof. Fisher's exposition of statistical methods is proving of real value to research workers. His chapters on tests of goodness of fit, independence, and on tests of significance, especially as applicable to small samples, are particularly useful. Several additions have now been made. A section has been included dealing with the exact treatment of four-fold tables in which the cell frequencies are small, introducing at the same time an adjustment recently published by F. Yates. Workers who are accustomed to use regression equations with a large number of variates will also benefit by a new section which provides the relatively simple adjustments to be made when, the calculations having been completed, it is decided that one or more of the variates used may with advantage be omitted. The possibility of doing this without laborious recalculation should, as Prof. Fisher suggests, encourage workers to make the list of independent variates included more comprehensive than has in the past been thought advisable.

The author's system of numbering his sections, tables, and examples enables the insertion of fresh material to be made without adjustment, thus references to them (though not to pages) will be valid irrespective of the edition used, a minor convenience for which those who quote, and those who review, should be grateful.

Anatomy for Dental Students

By Six Teachers. Edited by E. P. STIBBE, F.R.C.S., Senior Demonstrator in Anatomy, London Hospital, and Examiner for the Conjoint Board. London: Edward Arnold and Co. 1934. Pp. 429. 21*s*.

THIS work, which appears to be well suited to the needs of dental students, is by Prof. W. Wright, Prof. T. E. Yeates, Prof. J. S. B. Stopford, F.R.S., Prof. S. E. Whitnall, Prof. M. F. Lucas Keene, and Mr. Stibbe, who acts as editor. The anatomical information is good and sound, as would be expected from the names of the six sponsors of the book, which gives one the impression of being a side-growth from their well-known dissection manual. Details of tooth formation are not expected, of course, in books of this sort, being treated in extenso in the special works with which dental students are concerned, but a description of the positions of the different units of the dental series, in their relations to the various elements coming into the formation of the face, would make the short account of the development of this region more valuable; the relation of teeth, or of their fragmented parts, to fissures or developmental failures here forms in itself one of the reasons why the dental student should concern himself with the development of the jaws. The work is well produced and illustrated, and contains practical dissection instructions as well as chapters on descriptive anatomy.

THE LANCET

LONDON: SATURDAY, JANUARY 12, 1935

THE RECOGNITION OF OSTEOPATHY

THE only adverse comment we have heard on the excellent memorandum issued by a special committee of the British Medical Association and published last week is that it is as unjust to quote with disdain the original theories underlying the practice of a sect founded over 40 years ago as it would be to assume that the medical hypotheses then accepted would hold water to-day. Even if ANDREW STILL, the inventor of osteopathy, held that the primary cause of every disease is interference with blood-supply or with nerve function, or both, caused by a misplacement of one or other of the bones of the spinal column, the fact that this concept has had to be modified would not prove its derivatives to be equally untenable. Many medical beliefs have, as all know, been accepted as temporary structures, later to be discarded after providing the scaffolding for a more permanent building. It is fair to represent medicine as a city of which even the most modern parts will not last for many generations, and in which hypotheses are built only on the understanding that they will be examined from time to time, as are all temporary structures erected under licence, and removed unless they continue to provide adequate cover for the work carried on under their shelter. If, however, the promoters of the Bill before the House of Lords had defined more precisely the scope of osteopathy as practised to-day, the B.M.A. committee would not have been constrained to seek in the past the inspiration of its modern practice. It is in the fact that osteopaths have largely, if not overtly, receded from the doctrine enunciated by their founder, and have laid down a curriculum for their students including at least a smattering of most of the subjects taught to doctors, that danger lies; for the osteopath clearly wishes to induce the public to regard him as a healer equipped with adequate medical training. It seems unlikely that the support given to the Bill in the House of Lords, resulting in its reference to a Select Committee, will survive the exposure, in the evidence submitted to that Committee, of the direct and indirect consequences which would follow its passage into law. That a monopoly of certain not clearly defined methods of treatment should be secured to the osteopath could hardly have been the intention of the peers who recounted, as experiences in favour of the Bill, the successful treatment of various accidents and injuries, including dislocations and sprains. To give one example, the Swedish masseur whose ministrations procured for Lord GAINFORD speedy relief from pain and disability would gain nothing from the passage of this Bill; he might lose the right to give the treatment which had proved so successful. The disabling clause would affect with even more certainty the British bone-setter who has learnt his craft as apprentice to a relative or master with a reputation for exceptional dexterity. The established bone-setter of to-day might, by professing adherence to the osteopathic creed, gain entry to the proposed Register as a bona-fide practitioner of osteopathy. But what of his analogue of the future? If this Bill or anything like it became law he would be excluded rigidly from the practice of his craft if he had not had four years of academic training. The Bill is indeed a sort of half-acceptance of the contention of the medical profession that education in the preliminary sciences is essential to the acquisition of diagnostic skill, without which the uncontrolled practice of manipulation is a danger to the public. But the chief purpose of education in medical science is to train the student to keep an open mind on such problems as the ætiology of a disease, or the cause of a symptom, until convincing evidence has been collected, and the value of such training would be annulled if it were weighted by a bias in favour of a particular system of therapeutics.

An attempt to insist that all bone-setters shall subscribe to the same heterodoxy, on pain of losing their livelihood, would surely have been quashed at an early stage had the confusion between osteopaths and bone-setters not been so widespread. Bone-setting, or manipulative surgery, to give it a grand title, is an ancient craft that, to quote Mr. BLUNDELL BANKART,[1] can be acquired by anyone with two good strong hands and an inclination to minor surgery. It is practised freely at the present time by many groups of people, from the bone-setter, who is often of humble origin and little education, working by intuition tempered by experience, to the orthopædic surgeon and his assistants and pupils, whose actions are informed by a vivid mental picture, confirmed by radiograms, of the condition of the joint, with a definite conception of the result to be achieved. It is also practised by osteopaths and "chiropractors," a group which still subscribes much more firmly than do the osteopaths to the doctrine of the spinal origin of all disease. The medical profession, unlike the osteopaths, ask for no monopoly of this or any other form of treatment; we protest only that the responsibility of diagnosing these lesions cannot safely be undertaken by anyone who has not been through a full medical course. The force of this contention is increased rather than diminished by the reflexion that even qualified doctors often fail in diagnosis.

It should not be difficult to convince Parliament that the present Bill will not give the public what it appears to want, that is some means of distinguishing bone-setters of reasonable skill from those who may be incompetent charlatans. Would it

[1] THE LANCET, 1931, ii., 846.

be possible to devise criteria which would leave unhampered any reputable practitioner of "manipulative surgery" while giving the public some guarantee against gross abuse? We can think of none—certainly neither adherence to the osteopathic doctrine nor the assurance that the practitioner has passed through such a curriculum as that outlined on p. 111 would furnish satisfactory evidence of competence in the science and art of manipulative surgery. There are many branches of medicine in which the services of the skilful layman are valuable, and it would be wrong if any professional rule against "covering" were to prevent the full use of such services where a practitioner thought they might help his patient. But proposals whereby sick persons are encouraged to seek, in the first instance, the advice and treatment of the unqualified must be condemned, though protests from doctors will always be regarded askance. For to the public the reputation of the successful outlaw will always appeal, and medical criticism may be held as mere evidence of the trade-union spirit. If the public and Parliament—whether owing to their folly or our failure—are tiring of common sense, and insist on fostering the conduct of medical work by men and women whose training is by modern standards incomplete, they are of course at perfect liberty so to do. But such a policy is as unsound in principle as we believe it would be damaging in practice.

THE BERGER RHYTHM

SINCE 1924 Prof. BERGER of Jena has been making observations on certain changes in electrical potential in the human head, which he believed to come from the cerebral cortex; their only constant feature is the occurrence of regular and comparatively large waves at the rate of about 10 per second. These variations have now been studied also by Prof. ADRIAN and Mr. MATTHEWS at Cambridge, and the report [1] of their work follows closely on their letter [2] disclaiming credit for the original discovery. BERGER'S latest account [3] of his conclusions appeared at the end of last year and a comparison of the two papers shows that ADRIAN and MATTHEWS have added not only confirmation but also precision to our knowledge. Using moistened electrodes placed on the surface of the scalp over the parted hair they obtained photographic records of potential variations from a Matthews' oscillograph, and they are able to arrive at some very interesting conclusions. The Berger rhythm, they maintain, is due to the synchronous discharge of comparatively large numbers of neighbouring neurones in the occipital lobes of the brain, in a region concerned with pattern-vision but probably not the area striata itself. This discharge is characteristic of the resting and not of the functionally active condition of the neurones; it is at its maximum when the eyes are closed, when the mind is at rest, and when external stimuli are reduced to a minimum. Of these conditions, closure of the eyes is by far the most important; for in all normal cases the rhythm is abolished by the act of opening them, by mental effort, and by sensory excitation to which "affect" is attached, though it is unaltered by even the most intense muscular effort. Despite the established relation of the occipital lobes to vision, it is surprising that the mere acts of opening and closing the eyes, even in complete darkness, should have so great an effect. The explanation suggested by ADRIAN and MATTHEWS is that these two acts are automatically associated on the one hand with expectation and effort to see, and on the other hand with withdrawal of attention from vision. After the eyes have been opened in darkness several times in succession the effect of this action wears off and the rhythm persists unchanged by it—i.e., the expectation to see has been abolished by repeated disappointment. It is found that a uniformly illuminated field, without central pattern (provided the subject makes no effort to discover irregularities or pattern) does not induce persistent abolition of the Berger rhythm, and simple variations in intensity of illumination have, strangely enough, no effect at all. It is the perception of pattern or the attempt to discover it that destroys the waves at once. This being so, it is not clear why the explanation that pattern-vision abolishes the rhythm, by turning the synchronous discharge of rest into the asynchronous discharge of activity, has been preferred by ADRIAN and MATTHEWS to the alternative explanation that pattern-vision automatically fixes attention and that this alone—apart from patterned retinal stimulation—abolishes the rhythm, as is done by mental concentration of any other kind.

The *amplitude* of the waves can be varied slightly at will; they can always be increased by closure of the eyes, and possibly also by intense muscular effort, and they can be diminished by non-visual activities and by sensory stimulation; but their *rate* can be disturbed by one means only—by a flickering illumination of the visual field. This is all the more surprising because single, sharp alterations of illumination have comparatively little if any effect. Yet by flicker-stimulation the frequency of the flicker can be completely substituted for that of the spontaneous 10 per second rhythm, up to rates of 25 per second. That the processes underlying the spontaneous rhythm are not entirely interrupted, but are merely in abeyance during this substitution, is shown by two facts: there is a tendency to revert to the normal 10 per second rhythm when the flicker-rate is exactly twice this (i.e., 20 per second), and the effects of flicker are reinforced by these spontaneous processes when the flicker-rate and the spontaneous rhythm are equal (i.e., 10 per second). In this case the waves are not only of increased amplitude and regularity but also more resistant to interference by other factors.

The most important of the differences apparent between the results of BERGER and those of ADRIAN and MATTHEWS is that the former finds that the waves are maximal in amplitude when the electrodes are furthest removed from one another, wherever either may be, whereas the latter find

[1] Adrian, E. D., F.R.S., and Matthews, B. H. C.: Brain, 1934, lvii., 355. [2] THE LANCET, 1934, ii., 1311.
[3] Berger, H.: Deut. med. Woch., Dec. 21st, 1934, p. 1947.

they are maximal whenever one electrode is just above the external occipital protuberance and the other is more than 3 in. away—its position being otherwise immaterial. In conformity with these discrepant observations, BERGER believes that the source of the potential variations is distributed throughout the brain and is connected with those activities of which the brain partakes as a whole (in his term "psychological"), whereas ADRIAN and MATTHEWS hold that it is restricted to the occipital lobes. Both say that localised changes in activity or local impairment of the vitality of the brain will not produce any alteration in the rhythm that could be used clinically for topographical diagnosis. BERGER gives a short list of disturbances which he finds may impair the rhythm, but the collection—including, as it does, persistent fever, increase of intracranial pressure, and many forms of dementia—is so heterogeneous that it is hard to suggest any common factor. If ADRIAN and MATTHEWS are right in thinking that the appearance of this rhythm depends solely on the functional quiescence of the occipital lobes, then changes in activity or impairment of other parts of the brain cannot be expected to alter it except by abolishing it; for synchronous activity of the neurones can occur only under such artificial conditions as during flicker-stimulation, or when they are functionally inactive.

Within the last twenty years the electrical variations in almost every part of the body have been studied. In nearly all organs functional inactivity is found to correspond with electrical quiescence, while activity leads to changes in electrical potential. It is significant that, apart from the present work, the only organs whose behaviour offers a conspicuous exception to this rule are also parts of the visual apparatus. In the eye and in the optic ganglion of certain invertebrates (e.g., the water-beetle) the spontaneous rhythmic alterations in potential which appear when all light is withheld are abolished directly the eye is illuminated. The Berger rhythm from the occipital cortex is also an expression of functional inactivity, and not the least interesting thing about it is its disappearance when attention is concentrated upon purely intellectual exercises, such as a problem in mental arithmetic, and its return from time to time whenever attention wanders from this task. So much of recent analytical psychology gives the impression that the mind becomes a riot of morbid activity as soon as the censorship of conscious attention is withdrawn, that it is comforting to believe once more that though "sometimes I sits and thinks" there may also be occasions when "I just sits."

TOXIC GOITRE AND ITS TREATMENT

DURING the last ten years opinion has been crystallising into an agreed view that operation is the right treatment for most cases of toxic goitre which do not readily respond to other measures. In a review [1] made in 1920 of all the cases in the medical and surgical wards of Guy's Hospital, Dr. MAURICE CAMPBELL concluded that the late results of surgical treatment were not greatly superior to those obtained by medical treatment; in the surgical wards, however, there were a smaller number of fatal cases, even allowing for the operative mortality. Now with the more complete operation, with a greater knowledge of when the operation should be done, and with more complete coöperation between physician and surgeon, the surgical results are certainly better. The value of surgical intervention is fully confirmed by Prof. F. R. FRASER in summing up the results of treatment at the conclusion of three lectures delivered before the Derby Medical Society in May last, and printed in St. Bartholomew's Hospital Reports for 1934. In the present state of our knowledge, he writes, thyroidectomy is the best method of saving life in toxic goitre; but, he adds, the decision to employ this method and when to employ it depends upon the surgical skill and experience available. The non-surgical cases of the period 1926–30 at St. Bart.'s, even when they seemed to do fairly well at the time, showed when followed up an unexpectedly large number of deaths later. In the fourth lecture of the series Sir THOMAS DUNHILL makes it clear how intimate has been the coöperation between surgeon and physician at every stage. He deprecates the giving of large doses of iodine continuously to patients with toxic goitre; thus given, iodine may lose its power to improve and fail to help the surgeon when he most needs it. Even with iodine and practised operators he does not think all patients can be rendered safe for operation, but then he thinks the blame should rest on those who have deferred operation until the chances of anything approaching a complete recovery have slipped away.

For clinical purposes FRASER classifies his cases into diffuse toxic goitre and nodular toxic goitre, covering respectively the groups generally known as primary and secondary toxic goitre, which have the convenience of a direct bearing on the natural history of the disease. In the former, which includes most of the cases known as Graves's disease or exophthalmic goitre, the disease often starts suddenly and tends to be self-limited, though recovery may take two or three years apart from surgical treatment. In the latter, the onset may be very gradual but the disease generally progresses, slowly or quickly, and if it is at all severe is unlikely to be cured except by operation. Cardiac complications too are much more common. While psychological factors are more likely to be causative in the primary cases, the worries and anxieties seen in the secondary cases are for the most part the result of the disease. FRASER dwells on the need for knowing the life-history of patients with toxic goitre; he has been able to follow some of them for as long as 15 years, noting their chronic course with acute relapses from time to time and moderate health in the intervals. Any simple goitre which has been present for so long is likely to become nodular, although little is known of the factors which may, in the event, make it toxic. Some patients with neurasthenia and some with localised infections may have a slight goitre,

[1] Quart. Jour. Med., 1921, xv., 55.

associated with nervousness and tachycardia, which will be made no better by operation. The cardiac complications which used to be regarded as a bar to operation are now the reason for intervention, since as a rule it is the only way the heart can be helped. Paroxysmal auricular fibrillation may be controlled with quinidine without operation, but this is rarely the case with established fibrillation, if there is other evidence of hyperthyroidism. FRASER would advise operation where there is a goitre and fibrillation of unknown origin, apart from the symptoms as a whole; but such cases may respond well to quinidine. The combination of goitre and heart disease is one of the most fruitful fields for coöperation between physician and surgeon; the results in what seemed to be incurable heart failure are sometimes little short of miraculous. X ray treatment is only to be tried in slight cases or where operation is not thought desirable. Radium has proved less successful than X rays for cases of this kind.

The experimental work on goitre done during the last ten years—Dr. A. W. SPENCE's 132 references in his article in the same volume of reports are striking testimony to its extent—still fails to give us the exact knowledge we need for understanding and controlling human goitre. SPENCE reviews some of this work, and describes his own results in more detail. Thyroid hyperplasia is always the result of iodine deficiency, and develops when the iodine falls below 0·1 per cent. of the dried gland. Colloid goitre is always the result of involution of a preceding hyperplasia. This brings us to the clinical applications. Simple goitre is generally the result of a low iodine intake, but a relative deficiency may be present (*a*) where a normal amount of iodine is present but cannot be used normally (e.g., McCarrison's results of infection), or (*b*) where the demands for iodine are specially high. Such a relative deficiency may be produced in spite of adequate intake by several goitrogenic agents: (1) cabbage, and to a less extent brussels sprouts and cauliflower; (2) cyanides, especially methyl cyanide; and (3) the thyrotropic hormone of the anterior pituitary. SPENCE describes the production of goitre from feeding with cabbage, and shows that it is due to something in the cabbage and not to iodine deficiency. Drying the cabbage prevents this action, which is seasonal and bears some direct relationship to the rainfall. Hay and oats prevent the goitrogenic activity of cabbage, showing that there are many unknown food substances which influence the thyroid. Working with cyanides in America, SPENCE was able to produce goitre in rabbits, often with signs of hyperthyroidism and sometimes with exophthalmos, but failed to reproduce these results in London; presumably because some unknown substance in the diet prevented its action. The antigoitrogenic factor in hay and some other plants is not vitamin C; that is clearly shown, and SPENCE suggests that the thyroid hyperplasia produced by diets deficient in vitamins is due to the deficiency of some other unknown substances, since vitamins do not cause involution of the thyroid hyperplasia brought about by feeding with cabbage. If these very interesting researches do not yet show the way to the dietetic treatment of goitre they do suggest this possibility in the future.

ANNOTATIONS

CHILDREN'S IMAGINARY COMPANIONS

THE phantasies or day-dreams of children, sometimes only imperfectly differentiated in their minds from reality, have been the subject of much attention from modern psychologists in relation to their significance in the development of the child. The particular form of phantasy in which a child plays with and talks with and about imaginary companions has long engaged the attention of sociologists and psychologists. Its causation and significance are the subject of a detailed and unusually interesting inquiry recorded in the *Archives of Neurology and Psychiatry* for November by Dr. Margaret Svendsen, of Chicago. Only those children in whom the phenomenon had been more or less persistent for a period of months were included in the inquiry. The incidence amounted to just over 13 per cent., and 75 per cent. of those affected were girls. There was definite evidence that the children tend to be above the average in intelligence, the median I.Q. being 120. Temperamentally, however, 35 out of the 40 children under consideration presented personality difficulties of differing types, timidity, abnormal shyness, sensitivity, evasiveness at one extreme, and, at the other, love of the limelight and self-assertiveness. It used to be supposed that "only" children were particularly prone to this phantasy because of their lack of real companionship. The inquiry showed that this is true in a limited sense; 55 per cent. of the selected children were "only" children at the time of the creation of their companions. It is noteworthy also that the percentages of "only" children at 4 and 5 years of age in the selected group were much in excess of those of the control group. The mean differences in ages between the subjects and the next oldest and youngest siblings exceeded that for the controls by over two years and over one year respectively. These results are analogous to those obtained in a recent investigation of cases of stammering, another condition associated with personality difficulties. In every case the phenomenon of imaginary companions had appeared before 6 years of age, and indeed the median age was much less than this—namely, 2 years 5 months. In 33 out of the 40 the most vivid imaginary companions were of the child's own sex, and in the same proportion the children played in such a way as to suggest that they were believed to occupy space. Visual imagery appeared to be definitely present in half the cases. Realisation of the phantasmal character of the phenomenon appears usually to become definite between the ages of 5 and 6, and there was reason to believe that many children make some distinction almost from the beginning. The confirmation of these results by the study of larger numbers will be useful. Several questions remain unanswered. In so far as these phantasies are normal, if they ever are so, what is their function in relation to mental development? Is it possible that they are indicators of high imaginative powers which may be shown later, for example, in artistic ability, or are they, on the other hand, pathological, and precursors

of abnormal mental development later? The usual belief is that in childhood phantasies are normal, but that they are pathological if they continue into adult life. The latter half of this statement may be accepted, but is the former proved? These are only a few of the problems requiring elucidation, which will necessitate prolonged study of individual cases through a lifetime.

NARCOTIC DRUG TRAFFIC

AT the last session of the advisory committee of the League of Nations (Nov. 12th–28th) on traffic in opium and other dangerous drugs the situation in China was reported to be improving. The cultivation of the poppy had been prohibited in ten provinces and it was anticipated by the Chinese representative that in six years' time poppy cultivation, and indeed the use of opium, would be suppressed. New regulations of Draconian severity had been promulgated and would be administered by the military courts. The illicit manufacture, transport, or sale of narcotics are even to be punishable by death. In the discussion that followed, while tribute was paid to the zeal of the Chinese government, some apprehension was expressed that the new system might approximate to a government monopoly with all the dangers therein involved with the likelihood of its perpetuation as yielding a welcome revenue to the State. In Bulgaria, where illicit factories had been an occasion for anxiety, it was reported that of the seven which had been discovered three had been closed, another was not working, and the remaining three were under close supervision. A striking development in the shape of the setting up of narcotic factories in countries where they previously did not exist has contributed to the general tendency towards economic nationalism and self-sufficiency. The Polish representative urged that, as in the case of his own country, such factories should be restricted to production for home consumption only. The secretariat of the League was instructed to inquire and report as to the laws, orders, and regulations in force in different countries to effectuate the several conventions dealing with opium and other dangerous drugs, and also as to special police forces (where these existed) to counter clandestine manufacture and illicit traffic. The health committee of the League was requested to report on the question of codeine being a drug of addiction. A subcommittee was appointed to study further the Indian hemp question especially in view of marijuana cigarette smoking which (as was noted in our columns last week) had given cause for alarm in Canada and the United States.

THE NATURE OF VIRUSES

THE question whether filtrable viruses belong to the world of living things or are unorganised non-living agents is one which many investigators have tried to answer. The difficulty of solution lies, of course, in the inability to cultivate viruses in a medium devoid of living cells. Many have attempted to do this and although the majority have met with unqualified negative results, occasional successes have been claimed. None of these, however, has stood the test of time and it looks as though this direct proof of the living nature of viruses would be denied us for some time to come; it might even never be forthcoming. In the meantime all that can be done is to continue to collect indirect evidence bearing on the problem, and much has already been done in this direction. Viruses have been shown to possess the attributes of living things, the power to multiply and to adapt themselves to alterations in environment without loss of identity. Some of the larger ones have been identified with particles which can be stained and seen under the microscope and have the appearance of minute micro-organisms. In the case of one virus—psittacosis—its micro-organismal nature can hardly be in doubt. During development it shows a variety of forms which appear to follow one another in definite sequence—a conclusion based on the study, not only of fixed and stained preparations, but also of living virus in tissue culture. Recently Levaditi, Haber, and Hornus [1] have advanced additional evidence in support of the living nature of viruses. They have submitted certain viruses, toxins, and enzymes to the combined action of gonacrine—a dye of the acridine series—and light. These dyes have a marked bactericidal action and, like methylene-blue, they have a photodynamic action on viruses. Further, as Galloway [2] has shown in the case of rabies virus, this photodynamic action is not hindered by cell debris. Levaditi and his colleagues have found that gonacrine and light have no inactivating action on tetanus toxin and trypsin, whereas they inactivate viruses like herpes, rabies, vaccinia, and the bacteriophage. Curiously enough the virus of poliomyelitis was not affected and no reason could be found for this exception, but leaving aside poliomyelitis virus there was a clear distinction between viruses on the one hand and toxins and enzymes on the other in their susceptibility to the photodynamic action of such an acridine dye; the viruses and the bacteriophage behaved like living things. It is true that this work does not give a final solution to the problem of the nature of viruses, as Levidati and his colleagues readily admit, but it adds to that steadily growing mass of circumstantial evidence which makes the living nature of viruses more than ever probable.

FIXATION METHODS IN FRACTURES OF THE MANDIBLE

MODERN methods of treating fractures of the jaws demand the coöperation of the dental surgeon. Most of the cases are compound—Henry Sage Dunning, of New York, in a series of 1065 such fractures, found 98 per cent. to be compound into the mouth [3]—and septic infection must always be anticipated. The methods of fixation most used at the present time are a moulded cap cemented on to the surface of the jaw and wiring together of the upper and lower jaws. I. Samuels [4] strongly advocates intermaxillary wiring, under scopolamine and omnopon analgesia. The wire used is No. 24 gauge Angle's brass ligature wire. This wire is passed round the teeth, several loops being used in each jaw, and each loop having an eyelet, produced by a twist of the wire on the cheek side of the teeth. Through these eyelets the various loops are joined in series, the fracture being held reduced by one operator. A disadvantage of the method is that during the whole time the wiring remains in situ (averaging about thirty days) the patient is unable to move his lower jaw and has to be fed on liquids. On the other hand, the mouth can be kept clean, a powerful spray being used if required; the alignment at the occlusion is always open for inspection, and spicules of bone are free to work out through the gums; also—and this seems to be the greatest advantage—wiring can be immediately applied, without the time lost in obtaining impressions and making splints. Mr. G. V. Watt [5] describes fixation

[1] Levaditi, C., Haber, P., and Hornus, G.: Bull. de l'Acad. de Méd., 1934, cxii., 573.
[2] Galloway, I. A.: Brit. Jour. Exp. Path., 1934, xv., 97.
[3] International Jour. of Med. and Surg., 1934, xlvii., 277.
[4] Brit. Dent. Jour., 1934, lvi., 484.
[5] Ibid., p. 492.

by an interdental splint as the method of choice. The metal generally used is an alloy of silver and copper in equal parts, known as cuprous-silver. It is fixed to the teeth by copper cement. When a single splint can be used, covering the lower teeth only, free movement of the jaw is allowed. In some cases, notably in fractures at the angle or ascending ramus of the mandible or of the condyle, it is necessary to fix splints to both upper and lower jaws and wire them together. Dunning [1] recommends the cap splint for fractures in the median line, which do not tend to produce much displacement. In his experience fractures in the molar region, or behind the last molar, generally have to be treated by intermaxillary wiring. He advises the removal of the wiring in ten days and the substitution of a cap splint, being impressed with the difficulties of keeping the mouth clean and of avoiding respiratory complications when the jaws are wired together for long. Edentulous jaws present special problems. Samuels describes a method whereby wires are passed around the bone, close to its upper and lower borders, the ends of the wires being twisted, on the buccal surface, over a vulcanite splint fitted to the upper border of the jaw. A method of fixation quite different in principle to those just described is used by J. Vorschütz, of Hamburg.[6] Under local anæsthesia he inserts two long "lever screws" into the mandible, on either side of the fracture, and 6 cm. distant from it. The fracture is reduced and, with the jaws in accurate occlusion, a catgut stitch is passed around the teeth on each side of the fracture. The jaw and screws are then enclosed in a plaster-of-Paris bandage passed around the neck and lower part of the head below the ears and over the chin. It is claimed that, wearing the splint, the patient can open and close the jaw without disturbing the fractured ends. The older methods of plating and wiring fractures of the jaw seem to have fallen into complete disfavour now that dental surgeons are called in to help in treatment.

VITAMIN C IN BULK

THE lemon has been dethroned: it is no longer the sovereign antiscorbutic material, and its place has been taken by certain peppers of the genus capsicum. Prof. Szent-Györgyi, the discoverer of ascorbic acid as vitamin C, tells [7] how pure crystalline ascorbic acid may be prepared from the ripe fruits of either the "noble" pepper (used for the preparation of Hungarian paprika) or the fleshy pepper (used as a vegetable) by a complicated series of chemical manipulations. At the end of these he held in his hand not a scanty milligramme or two but 3 kg. of the material. Moreover, when recrystallised, the vitamin is found to be stable even at room temperature. It should not be long now surely before scurvy becomes unknown. That it has not been negligible hitherto is shown by the *Times* account (Dec. 28th) of the recent disastrous expedition against Nanga Parbat in the Himalayas, in which it is suggested that lack of vitamin C may have contributed to the failure. The protective daily dose of ascorbic acid for an infant is reckoned to be about 25 mg.,[8] and a man suffering from fully developed scurvy has been cured by daily intravenous injections of 40 mg.[9] If the protective dose for a man is calculated on the liberal basis of 50 mg. a day, 1 g. would last him 20 days. Clearly the problem of transport and storage of vitamin C for Arctic sledging parties and remote climbing expeditions is completely solved. In considering further possibilities it should not be forgotten that *l*-ascorbic acid, active vitamin C, has actually been synthesised, though not as yet on any considerable scale.[10]

Prof. Szent-Györgyi is an internationalist and a man of goodwill. His paper describing the process for preparing ascorbic acid on the large scale ends with this simple sentence: "No patents were taken out for the process."

In our present issue appears a paper by Dr. L. J. Harris and Dr. S. N. Ray, which points to a further practical application for vitamin C in bulk. These workers have studied the urinary excretion of ascorbic acid on various diets and have confirmed the observation that the amount excreted differs according to the vitamin C reserves or "saturation" of the person tested. They suggest that this fact might be used as the basis of a test for the prescorbutic condition—a suggestion also made this week in our correspondence columns. For instance, if an infant was suspected, from dietary history and failure to gain weight, of being in a state of latent scurvy, it could be given a known large dose of ascorbic acid, and the proportion excreted would, it is believed, give definite information as to its need of the vitamin. Since the estimation can be made by titration of the urine, the test presents no special difficulties. The only one of the kind hitherto used has been Göthlin's capillary resistance test or modifications of it, but this is usually considered unreliable, since it may even give different results for the two arms of the same individual. In Scandinavia and other countries with a long Arctic winter an accurate test would be useful for adults as well as infants, and everywhere where babies are artificially fed there may be from time to time an application for it. There does not seem to be any published evidence of widespread latent deficiency of this type in the British Isles—presumably, as Dr. Helen Mackay said in her recent review,[11] because fruit juice is so generally given to infants. But the advance of pasteurisation makes such a supplement more than ever necessary, and Dr. Harris's comparison of bovine and human milk shows that even fresh untreated milk from the farm is not reliable as a constant source of vitamin C. The cult of the orange cannot yet be universal, and it may well prove that latent scurvy is not so rare here as has been assumed.

TERATOMA OF THE BRAIN

TERATOMATA and dermoid cysts of the central nervous system are so rare that they perhaps hold a greater fascination for the pathologist than for the clinician. They may, however, show some very interesting localising symptoms. Thus in a large proportion of the reported cases of teratoma of the brain the tumour occupied the pineal body, and in some of them the patient (always a male) exhibited the syndrome known as macrogenitosomia præcox. Another relatively common site is the infundibular region; an example of this is seen in the first of the two cases reported by Dr. H. E. Harding and Prof. A. E. Naish in our present issue. The patient, a girl of 9 years and 11 months, showed symptoms pointing to extensive hypothalamic disturbance. As an infant she slept for longer periods than was usual for her age, and later on this habit developed into pathological sleep. Although intelligent she was remarkably unemotional

[6] Med. Welt, Oct. 20th, 1934, p. 475.
[7] Banga, I., and Szent-Györgyi, A.: Biochem. Jour., 1934, xxviii., 1625.
[8] Szent-Györgyi, A.: Deut. med. Woch., 1934, lx., 556.
[9] Schultzer, P.: THE LANCET, 1933, ii., 589.
[10] Reichstein, T., Grüssner, A., and Oppenauer, R.: Helv. chim. Acta, 1933, xvi., 1019.
[11] Mackay, H. M. M.: THE LANCET, 1934, ii., 1462.

and did not exhibit the usual manifestations of anger, fear, or pleasure. There was a conspicuous instability of temperature-regulation, shown by a tendency in earlier life to sharp rises and falls and, towards the end, an intense sensitiveness to cold. Another feature pointing to hypothalamic or pituitary disturbance was the development, three years before death, of polyuria and polydipsia after an attack of whooping-cough. There was no glycosuria. At necropsy a large teratoid tumour was found in the hypothalamus; the pituitary gland was macroscopically normal.

An unusually large dermoid cyst of the brain, associated clinically with facial asymmetry, partial paralysis of the right arm and leg, epilepsy, and some degree of mental defect has lately been described by Dr. P. Phillips and Dr. Doris Stone.[1] Post mortem it was found in the left cerebral hemisphere.

EPIDEMICS OF ENCEPHALITIS

THE name of Levaditi has been closely associated with the experimental side of encephalitis since the early days of the great epidemic in Europe, and his opinions have carried respect. In a critical review [2] he and his colleagues deal at length with the experimental findings in the three outbreaks—the European, the Japanese, and the more recent one in St. Louis and other parts of the United States. After a short account of the clinical features and the transmissible viruses found in each of the three, they consider the question: What are the ætiological relations between these three best known types of human encephalitis—Economo's disease, the epidemic encephalitis of Japan, and the "infectious neuraxitis" of St. Louis? Observations made at the Rockefeller Institute by Webster and Fite [3] show that sera obtained from the Japanese type are incapable, in vitro, of neutralising the virus isolated from American cases; also that while, from a serological point of view, there is identity between the epidemics in St. Louis and Kansas City, Paris (Illinois), and New York (1933), there is none between these and the so-called "lethargic" type of Economo. Further, the St. Louis virus is something quite different from the filtrable germs of herpes, poliomyelitis, equine encephalomyelitis, and vesicular stomatitis. Working with some of the material supplied them from America, Levaditi and his colleagues have themselves also carried out investigations and come to the following conclusions. The virus isolated in the epidemic of St. Louis, Kansas City, and Paris (Illinois) belongs, they believe, to the same family of neurotropic ultra-viruses as the germ of herpes, but it is distinguished by the absence of dermotropic affinities, by a difference in its behaviour to the various constituents of the neuronic nuclei, and especially by its harmlessness to the rabbit, the animal specially suitable for the experimental study of herpes. As regards the relation of this American virus to Economo's disease, they find that the serum of patients previously (1917–28) suffering from lethargic encephalitis (Economo's type) and actually parkinsonians, all having received their infection in France, has no destructive action on the virus of St. Louis. They therefore conclude that ultra-viruses of different nature, though belonging to the same family, are capable of producing in man various forms of "epidemic neuraxitis," which can be differentiated both clinically and experimentally. There is thus no such thing as a single "epidemic encephalitis," but rather there are multiple encephalopathies, both infectious and contagious. It remains for future work to show why certain of the neurotropic viruses undergo modifications of their tissue affinities leading from obligatory dermotropism (vaccinia, herpes) to the more elective neurotropism (encephalitis, poliomyelitis).

[1] Bristol Med.-Chir. Jour., 1934, li., 247.
[2] Levaditi, C., Schoen, Mlle R., and Levaditi, Jean: Presse méd., 1934, xlviii., 1973.
[3] Webster, L. T., and Fite, G. L.: Science, 1933, lxxviii., 463.

SIGNIFICANCE OF THE ACTION OF ŒSTRIN

THE tissues affected by œstrus in animals are very diverse. We observe, for instance, hypertrophy and hyperplasia of the squamous epithelium of the vagina, the columnar epithelium of the uterus, the smooth muscle of the uterus, and the tissues of the mammary gland, while profound modifications in behaviour suggest changes in the central nervous system. In the spayed animal all these effects may be produced by the administration of œstrin, which exists in at least two closely related crystalline forms, œstrone and œstriol. Not only does œstrin pick out varied types of tissue, but it does not act universally on them; thus, no hypertrophy of the squamous epithelium or smooth muscle of the œsophagus has been described. When we recollect that most of the secondary sexual characteristics of puberty in the female can be reproduced by œstrin, then in the whole animal kingdom we find almost every tissue of the body coming under its influence, but only to a limited extent and in certain situations. Since œstrin in any of its forms is a pure chemical substance, the probability is that the question whether or not it will act on any group of cells is determined by some property which they may or may not possess, and which is independent of their known histological characteristics. This agrees with the observation that the tissues concerned in reproductive activity are predominantly affected in all animals, and not only in the female but in the male. We know that up to a point the development of the sexual organs in male and female is identical, and that the same structure is capable of producing one or other type of organ; it is possible to indicate, for any part of the reproductive tract in one sex, its homologue in the other. David, Freud, and de Jongh,[1] of Amsterdam, state that the differentiation is largely ignored by œstrin, and they have been using the seminal vesicle and related organs of castrated male rats as indicators for the type and degree of activity shown by injected esters and other derivatives of œstrone.

They state that œstrone, in castrated animals of either sex, acts predominantly on the muscle, submucosa, and interstitial tissue of tubular organs such as the uterus or seminal vesicle. Owing to their position, the growth of these rapidly overtakes that of the epithelium, which, with the narrowing of the lumen, may become stripped and damaged. This state of affairs is corrected in the female by simultaneous administration of progestin, the corpus luteum hormone, and in the male by hombreol (male hormone). These substances ensure that proliferation of the epithelium and ramification of the lumen keep pace with the hypertrophy of the enclosing tissues; unlike œstrin, however, they are not sexually interchangeable. The statement of these authors that "sex hormones are not sex-specific, nor do they specifically affect whole organs but only certain tissues" is to a certain extent true but nevertheless misleading. From the point of view of the whole organism, one would have no hesitation in saying that the specific action of œstrin was to produce œstrus in the female, that it probably initiated the development of certain secondary sexual charac-

[1] Biochem. Jour., 1934, xxviii. 1360.

teristics, and that it had a strong claim to the title of "the female sex hormone." Its action on certain tissues in the male seems to be determined not so much by their visible character as by the fact of their development from structures which might have become female. The action of œstrin has certainly not the teleological significance in the male which it has in the female.

An important aspect of this work is the attempt to correlate modifications in the structure of œstrone with its selective action on tissues. Actually this was unsuccessful, but success would be important. Following our previous line of argument, however, it would not be surprising if œstrin had but a single fundamental action, whose particular manifestations in any tissue were determined by some characteristic of that tissue. Even if this were so, experiments with œstrin derivatives would be important for localising the active part of the molecule.

A CHAPTER IN CÆSAREAN SECTION

IN an entertaining volume[1] written for the centenary celebration of the Manchester Medical Society, Dr. E. M. Brockbank does tardy justice to the memory of John Hull (1761–1843), first president of the society and a pioneer of Cæsarean section. Hull was the son of an apothecary at Poulton-in-the-Fylde and was apprenticed to a Blackburn surgeon of the name of Lancaster with whom he began to attend lying-in cases when he was not more than 17 years old. Hull was an earnest and diligent student, and intent on taking the diploma of the Corporation of Surgeons he completed the fees required by selling a copy of his lecture notes to a fellow student. Dr. E. B. Leech has told us that these notes were written in a form of shorthand invented by "Dr." John Byrom, author of the hymn "Christians Awake." Hull kept down his personal expenses by living largely on bread and fruit—it was in fact a custom of his life to breakfast (and sometimes to sup) off bread and milk. In 1784 he returned to Blackburn with one guinea in his pocket, but in the following year Mr. Lancaster took him into partnership and it was not long before Hull bought the practice and married a sister of Dr. William Winstanley, hon. physician to the Manchester Infirmary. One of his early experiences was to deliver quintuplets which he preserved in spirit and are now in the Hunterian Museum. There was then no lying-in hospital at Blackburn, and in order to get the practice he wanted Hull moved to Manchester in 1796 and almost at once became engaged in a public controversy on Cæsarean section which helped to establish his reputation. Before leaving Blackburn a pupil of his, Dr. Barlow of Blackrod, had performed what was believed by some to be the first Cæsarean operation in England from which the mother recovered. This woman had fallen off a market cart and had her pelvis crushed so that subsequent natural delivery was impossible. Hull however believed that this operation was only a "gastrotomy," the uterus having previously been ruptured. Two years after he moved to Manchester, Hull was called in to a consultation over a woman who had been in labour for several days, and performed a Cæsarean section, too late, as it turned out, to save the life of either mother or child. The incident led to an exchange of polemical reflections between William Simmons, senior surgeon to the Manchester Infirmary, and himself, conducted partly in Latin verse, partly in Greek quotation, which ended in dividing the practitioners of the district into two camps about the justification for performing the operation. Those in favour of it were known as the Cæsareanists and attached to, or supporters of, the Lying-in Charity, the opponents or anti-Cæsareanists being some members of the Manchester Infirmary staff and their adherents. But Hull was undiscourageable and persisted in his teaching until he had established the necessity of Cæsarean section in certain abnormal conditions of the pelvis and had showed that laparotomy could be done without destroying the mother and often without sacrifice of the child's life. Obstetrics also owes to him the picturesque name of phlegmasia dolens for the condition first described by the Manchester surgeon Charles White. It was probably his familiarity with systematic botany which gave him a happy facility of coining appropriate names. Later the post of physician was created for him at the Lying-in Charity, and this he retained until his retirement at the age of 76. Although Dr. Brockbank's account of John Hull is the first biography of this great man, he appears several times in Mrs. Linnaeus Banks's "The Manchester Man," in which history is mingled with romance. But Hull's untiring activity as sketched by Mrs. Banks is a matter of fact. He rose at 6 A.M., and was often in the saddle soon after on his way to Lancaster or Buxton or other distant places. After consultation at his rooms from 1 to 3 P.M., he visited in his carriage in which during the winter he had a small lamp so that he could read during his journeys. For besides his knowledge of the classics he had learned French, German, and Italian in order to keep in touch with all that was written on obstetrics.

[1] Manchester: Sherratt and Hughes. Pp. 101. 5s.

INTERNATIONAL NEUROLOGICAL CONGRESS

THE second International Neurological Congress will be held in London next summer, from July 29th to August 2nd, under the presidency of Dr. Gordon Holmes, F.R.S. The first subject of discussion will be the epilepsies—ætiology, pathogenesis, and treatment—and the speakers will include Prof. J. Abadie (Bordeaux), Dr. Stanley Cobb (Boston), Dr. W. Spielmeyer (Munich), Dr. Wilder Penfield (Montreal), and Dr. L. J. J. Muskens (Amsterdam). On succeeding days there will be symposiums on the physiology and pathology of the cerebro-spinal fluid (Dr. L. Weed, Dr. G. Schaltenbrand, Dr. Riser, Mr. Hugh Cairns, and Dr. Georgi); on the functions of the frontal lobes (Prof. J. A. Barré, Prof. P. Delmas-Marsalet, Prof. K. Goldstein, Prof. A. Donaggio, and Dr. Clovis Vincent); and the hypothalamus and the central representation of the autonomic system (Prof. Ariëns Cappers, Prof. Le Gros Clark, Prof. W. R. Hess, Prof. Lhermitte, and Dr. Harvey Cushing).

The triennial Hughlings Jackson lecture will be given on August 2nd by Prof. O. Foerster, of Breslau, and there will be receptions by the Royal Colleges and by the Section of Neurology of the Royal Society of Medicine. The meetings are to be held at University College and the executive officers of the congress are: Dr. Kinnier Wilson (secretary-general); Dr. Macdonald Critchley and Dr. E. A. Carmichael (assistant secretaries); and Dr. Anthony Feiling (treasurer). Dr. Wilson should be addressed at 14, Harley-street, London, W.1.

BRISTOL GENERAL HOSPITAL.—A sum of £10,000 is required by this hospital for structural alterations and new equipment for the X ray, massage, and electrical department.

PROGNOSIS

A Series of Signed Articles contributed by invitation

XXXV.—PROGNOSIS IN ACUTE INTESTINAL STRANGULATION

IN assessing the prognosis in cases of acute intestinal strangulation certain

GENERAL FACTORS

have first to be considered :

1. The *age of the patient* is of importance—the very young and the very old being least able to tolerate the initial shock and the subsequent toxæmia.

2. Especially in the case of internal strangulation by a band the *duration of symptoms* is of vital importance—any delay in operating longer than 12 hours from the onset adds enormously to the risk. Early diagnosis is essential and the failure to detect an internal strangulation in the early stages has cost many lives.

3. The *site* of the strangulation and its cause are factors of considerable moment. In general terms it may be said that the gravity of the condition increases with the height of the strangulation—strangulation of the jejunum being more fatal than that of the ileum, and so on. Internal strangulations, owing to delay in diagnosis, are necessarily more fatal than strangulations of external herniæ, in which the condition is usually relatively obvious. (Mortality from internal strangulation is 34·3 per cent., from all classes of external hernia 17·8 per cent.) Of strangulations in external herniæ there is little difference in the mortality of the femoral and inguinal varieties (12·9 per cent. and 12·6 per cent. respectively), whereas in umbilical herniæ the mortality rises to 41·1 per cent.—this is due to the type of patient affected in the latter case.

4. *Previous infection.*—Lastly, acute strangulation by a band in a patient who has recently been operated on for a suppurative intraperitoneal condition such as acute appendicitis is always associated with a high mortality, owing to the inevitable disturbance of the infected peritoneum at the second operation.

SPECIAL FACTORS

The special factors affecting the prognosis in these cases must be considered from the point of view of risks from aspiration into the lungs of septic material, from shock and from the local condition of the gut.

1. The risks of *aspiration pneumonia* can be minimised by emptying the stomach by syphonage with a Ryle's tube before the operation. In severe cases, where vomiting is a marked feature, the tube may with advantage be left in situ for 24 hours after the operation. Inhalation anæsthesia should be avoided if possible, spinal anæsthesia being employed for internal strangulations and spinal or local anæsthesia for external herniæ.

2. *Shock*, which is often profound, can be diminished by a short period of warming up before operation and by the administration of fluid by the bowel or by a vein. Speed in operating is essential and every precaution must be taken to avoid undue exposure and handling of the intestine. To allow many coils of distended bowel to escape from the abdominal cavity during an operation for the relief of obstruction is to expose the patient to grave risks both from shock at the time and subsequent ileus.

3. The prognosis as regards recovery is largely dependent on the *local condition of the gut* at the site of strangulation and on the condition of the gut above the site of constriction. If simple division of a band in an internal strangulation or of a constriction in an external hernia is all that is required the prognosis is relatively good. Where, however, something more is required, such as the local repair of a gangrenous patch, an anastomosis, or a resection, the mortality inevitably rises from these factors alone. The mortality of primary resection in cases of strangulated hernia is 42 per cent.

Extreme *distension of intestine* above the point of strangulation is of grave import, but the toxæmia resulting from the retained intestinal contents can be diminished and restoration of the function of the bowel can be assisted by emptying the distended coils. Such emptying may be effected by a trocar and cannula or in severe cases by sewing into the bowel a large rubber catheter so as to allow continuous drainage. This tube can also with advantage be used for the introduction of fluid into the bowel.

IMPORTANCE OF AFTER-TREATMENT

Efficient after-treatment is of the greatest importance, and many patients can be saved by the adoption of suitable methods.

1. The value of continuous syphonage of the stomach by a Ryle's tube where vomiting has been severe has already been referred to.

2. The chloride deficiency which is a sequel of vomiting can be overcome by saline given per rectum and also by 10 per cent. NaCl solution given intravenously. Saline given continuously by the rectum is of the greatest value in restoring lost fluid to a depleted patient, in overcoming the effects of toxæmia and thus restoring normal peristaltic action to the intestine.

3. Ileus, which is a dangerous feature, can also be prevented or overcome by the following methods :—

(*a*) Bile—human by preference—or fresh ox bile if no human bile is available—is of great value. 3 oz. of bile in 6 oz. of saline are run into the large bowel and allowed to remain until spontaneously expelled ; if this does not occur a turpentine enema is given some three hours after the bile has been administered.

(*b*) The only safe drug to be given by the mouth is magnesium sulphate in ℥i doses. This acts purely by osmosis and helps to sweep away toxic products.

(*c*) Drugs acting on the bowel wall directly, such as eserine and pituitrin, are to be avoided, as the only effect they have is still further to fatigue the worn-out bowel muscle. Acetylcholine may possibly be of value as its action is indirect.

(*d*) Anti-gas-gangrene serum appears to minimise the effects of the toxins produced by *B. welchii* in the stagnant bowel content. If given it should be given early—at the conclusion of the operation—and it is most effective when given intravenously.

CLAUDE FRANKAU, M.S., F.R.C.S.
Surgeon to St. George's Hospital.

SPECIAL ARTICLES

CAN PHYSICS HELP THE DEAF CHILD?*

By Phyllis M. Tookey Kerridge, M.Sc., Ph.D., M.R.C.S.

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THE most urgent need of the deaf child is good speech. How can physical science best help to teach him it, if he has none and hears none? Would it be best to translate speech into terms which can be appreciated by one of his perfect senses, such as sight or feeling? Many devices have been elaborated on these principles, but they have not been taken up very widely. This, I think, is because they are not simple enough, and because they involve re-education of the teacher as a preliminary to education of the child. Education through the ear is comparatively simple from the teachers' point of view. Moreover, the amazing naturalness of the voice of the child who has a trace of hearing for everyday noises, which cannot yet be taught to the child who never hears the human voice in his ordinary life, alone should warrant the experiment of using magnified sounds in the education of the deaf.

I shall therefore confine myself to discussion of physical help through hearing and this will be considered under the headings of:—

1. Tests of hearing.
2. Hearing "aids."
3. Methods of using hearing aids for teaching purposes.

There have been no "amazing new discoveries," as the newspapers say, in any of these subjects, which are each centuries old, but comparatively rapid progress has been made in the last twenty years, following on the advances in the physics of acoustics.

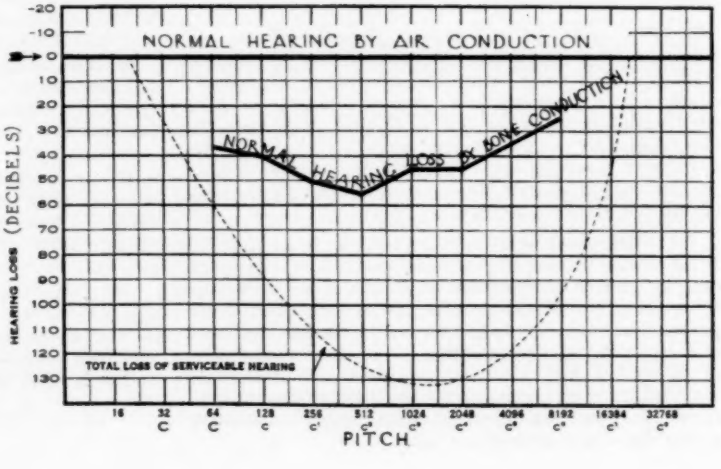
Tests of Hearing

Accurate testing of hearing is an essential bedrock on which to build. The deafness of many people varies from day to day, and psychological difficulties of testing vary from one person to another. These uncertainties remain, but the end-result is as reliable as possible only if the testing apparatus itself is accurate and the test is easy. When testing is done with the view to using sound-magnifying apparatus subsequently it is obvious that the voice test is inadequate for the deafer children, as a voice is not loud enough. It is not a very accurate test in any case. Nevertheless, it will probably long remain a preliminary test for the minor degrees of deafness. Tests should also be made over the whole of the audible range of pitch, as uniform deafness is rare, and many children hear low notes comparatively well, and these can be used for educational purposes. Accurate testing both for air and bone conduction is usually done now either by the use of calibrated tuning-forks, or with a pure tone audiometer. The latter is a large and somewhat expensive instrument but is very much easier to use with children than tuning-forks, chiefly because the speed of the test can be varied to suit the temperament of the child. The gramophone audiometer is useful for detecting and measuring deafness in the "hard-of-hearing" but is not often used for the deaf child, since its use requires understanding of heard words.

The easiest way to express the results of hearing tests is by means of a graph. The form shown (Fig. 1) is that usually associated with a tone audiometer test but could equally well be used for tuning-fork tests. The amount of hearing loss is expressed vertically in decibels, but could be in any unit you liked, provided you knew what it was and could explain it to other people. The pitch of the testing note is represented horizontally. The note having a pitch, or frequency, of 64 cycles per second corresponds to the C two octaves below the middle C of the piano, if the piano note were purified of those complicating harmonics or overtones which give it its pleasing and characteristic sound. It is also the pitch of the lowest string of a cello. The C4 marked 2048 corresponds to the pitch of the highest C on the piano. The octaves above are not essential for the understanding of speech, except s, sh, ch, v, th, and f, which require frequencies up to 6000, but the high frequencies transmit those harmonics of speech which enable us to distinguish one person's voice from another's.

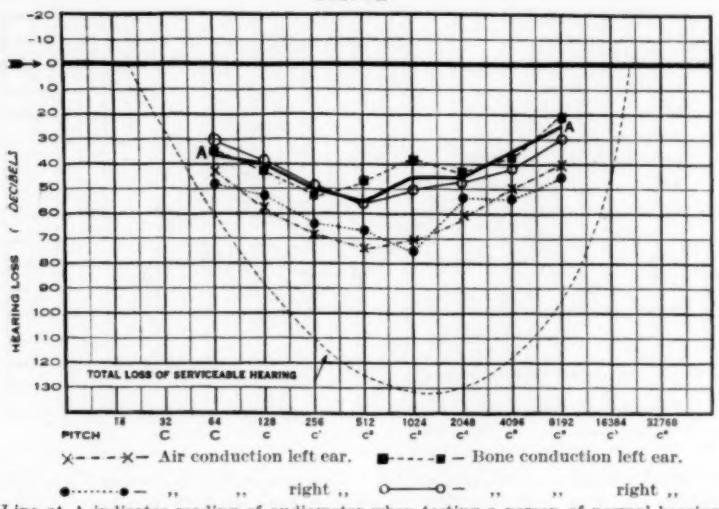
The lines named on the graph indicate the average hearing of normal persons in a quiet room by air conduction, by bone conduction, and that which corresponds to complete deafness. It will be seen that one has more hearing to lose in the middle part, which is also the region most essential for speech interpretation. It will also be noticed that even the normal person hears very much worse through the bone than by air conduction. Hence a deaf person may have quite unharmed bone conduction and considerably damaged air conduction, and yet his hearing by air may be better than by bone. I stress this particularly because badly worded advertisements at the present time are bringing hope unjustifiably to many deaf people. There are people who can hear better and more distinctly through

FIG. 1



* A lecture given to the National College of Teachers of the Deaf at the Educational Conference at University College on Jan. 5th. The term "deaf" is defined by Section 69 of the Education Act, 1921, as "too deaf to be taught in a class of hearing children in an elementary school," and it is used in this sense throughout the lecture.

FIG. 1 A



Line at A indicates reading of audiometer when testing a person of normal hearing with the D.-80904 bone conduction receiver.

their bone than through their whole ear, but these are not a very great number. There are others who can hear loudly through their bone but only confusedly. There is a factor in bone hearing which is at present more mysterious than the rest of the hearing mechanism.

For those unaccustomed to thinking in decibels the following figures may be helpful :—

Decibels.	*Approximate noise equivalent.*
0	Threshold of audibility.
10	Country "quiet."
20–30	An ordinary room.
40	A noisy room.
50	A car noise.
55	Ordinary conversation.
60	Loud radio speech.
70	Busy London traffic.
80	A motor horn at 80 ft.
90	A pneumatic drill at 20 ft.
100	An aeroplane engine at 10 ft.

The accompanying Figures show hearing curves of children in the London deaf schools, which will serve as typical examples. Fortunately the shapes of the curves are not as numerous as the children, and they fall into a few forms only, although the amount of deafness of each type may vary from a very little to almost completion. In my experience, however, complete deafness is very rare. Testing with the loud notes of the tone audiometer, I have only found 3 cases in 400 children in the London deaf schools in whom I could not detect any hearing anywhere in the scale.

Fig. 1A shows the curves of a child whose hearing by air conduction is impaired about equally in both ears to an extent varying from 40 to 75 decibels below normal, the hearing loss being greatest in the middle frequencies. He would not (and in fact does not) hear conversation. He would hear easily and well with a speech-magnifying instrument. Notice that his hearing by bone conduction is quite normal and better than his air hearing.

Fig. 1B shows a case where the deafness for the high notes is much greater than for the low. There is impairment of bone conduction too, but the curves are not parallel. This girl can hear conversation, as her defect is not greater than 55 decibels in the middle range. She is in a partially-deaf class, and her headmistress reported that her speech was good but weak in s, and one can see why, for s needs the frequencies near 6000, where her deafness is greatest.

Fig. 1C shows the hearing of a child of whom it would usually have been said that she was stone deaf from birth. Yet in fact she has hearing over the whole range, but at too low a level to be of any use with unmagnified sounds. Notice that her air conduction and bone conduction are identical, and that there is no difference between her two ears.

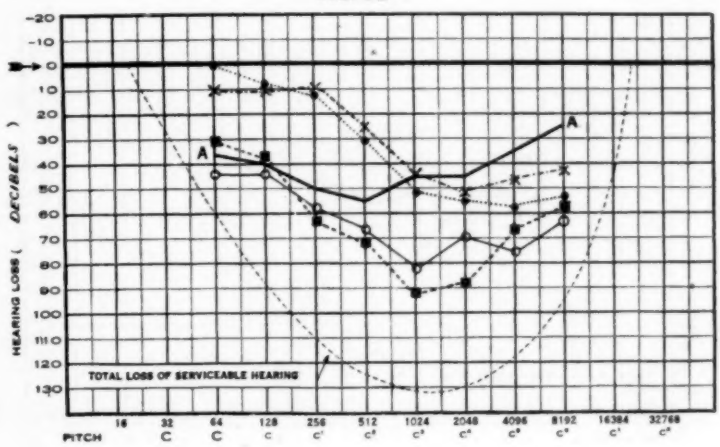
Fig. 1D shows the patch of hearing of a girl who has been deaf from birth, as has her sister also. She has detectable hearing in one octave only by air conduction and over three octaves by bone conduction. She has no useful hearing at all in the speech range.

It is not possible in the present state of knowledge to deduce exactly what is wrong with the ear from a medical point of view from a study of these graphs. Enough is known to be able to say that the interpretation is not simple, and research on the correlation between the pathology and the physical end-result is being carefully and laboriously worked out in the Johns Hopkins Hospital in America, and in the course of years we shall learn more from them. Fortunately the temporary ignorance does not prevent all progress in attempts at compensation by physical means for the physical defect.

Hearing Aids

It should be axiomatic that it is desirable that a hearing aid should suit the patient. Much has already been written about prescribing hearing aids, like spectacles, and making the aid exactly fit the defect. I do not know how often this has in fact been done, but in my experience, as far as total loudness is concerned, it is not necessary, and is indeed resented by the patient, who is hurt by the apparently excessive noise. All that is required is to magnify sufficiently

FIG. 1 B



to enable him to hear sounds that are 30 or 40 decibels above the normal threshold. He will then be able to hear conversation easily. He does not need to appreciate the minutiæ of the quiet of the countryside. This is fortunate, for it means that the "stone deaf" person, with 80 decibels loss, can be made to hear with a small instrument magnifying by 40 decibels; whereas if complete matching of the aid to the defect were essential, only the hard-of-hearing cases with 40 decibels loss could be helped with a similar instrument.

Where matching is important is not in total loudness, but that that part of the scale in which the person is deafest shall be magnified most, not the whole pitch range indiscriminately, nor only that part which can be most easily magnified by a given microphone. The characteristics of the microphone always determines largely the degree of matching which is practical, but not that which is ideal.

Statements have been made that aids damage the hearing, and on the other hand that they improve it. I know of no scientific evidence that the former is true and I do not see how suitable evidence on the point could be obtained. I think the impression has been erroneously gained by the too long use of unaccustomed instruments, which have produced fatigue of hearing, for which rest is a cure, and wise use at first a preventive measure. I do not consider that the outlook in deafness is good enough to withhold instrumental help from cases on the grounds of hypothetical future deterioration in the hearing. Similarly it is obvious that an instrument which merely magnifies sound does not cure the deafness, but in some very deaf people exercise of the hearing does improve the perception to a certain degree. I will give two examples.

The curves in Fig. 2 represent the hearing of a boy of 13 who was born deaf, and without an aid only heard the hoot of a motor. The lower curve represents his hearing last March. Since August he has been wearing an individual portable aid during school hours. The boy and his parents said persistently that his hearing was improved, that although he did not wear the aid at home he had heard the door-bell ring and a man cough, and he could distinguish between a voice singing and a band on the wireless, and enjoyed the rhythm of the music. After he had used the instrument for three months I re-tested his hearing and it will be seen from the upper curve that it had in fact improved, and this must be attributed to the exercise of the ear or the attention.

FIG. 1 C

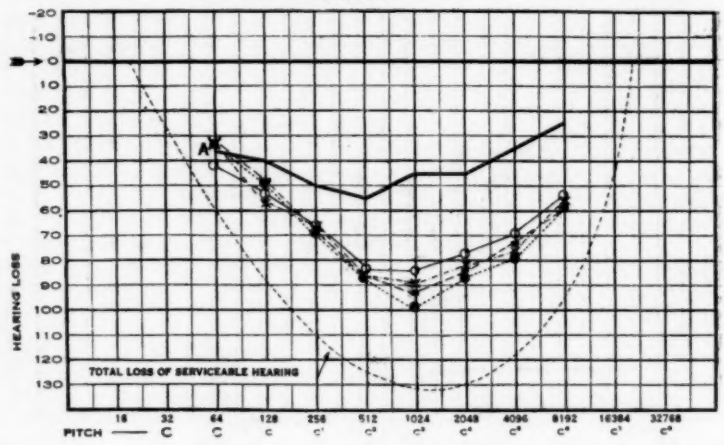
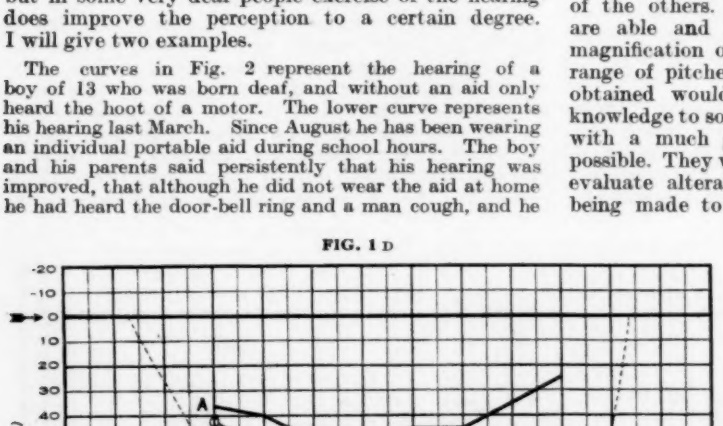


Fig. 3 shows the curves of hearing of an adult who was born deaf and had no hearing for speech, who had used a new instrument for the first time for two hours on two successive days, using the right ear only. She was re-tested at the end of the second period. The left ear curve was identical with that of the previous day, while the right ear showed appreciable improvement, particularly in her worst region.

The commercial hearing aids may be roughly divided into those that are frauds and those which are not. The latter may be subdivided into those which suit the patient and those which do not. It is hoped to be able to protect the public in the future from the fraudulent variety by official testing of the others. The National Physical Laboratory are able and willing to measure the amount of magnification of sound by hearing aids over a wide range of pitches. The figures which would be thus obtained would enable people with the necessary knowledge to sort out the suitable from the unsuitable, with a much greater accuracy than is at present possible. They would also enable instrument makers to evaluate alterations in design. Attempts are now being made to cover the initial costs of launching this service, so that it can be continued at a price which will enable every instrument sold to the public to be tested. In this way it is hoped that the deaf public may be prevented from exploitation and both the medical profession and the instrument makers helped to improve the instruments.

FIG. 1 D



A more scientific classification of hearing aids is as follows:—

I. NON-ELECTRICAL INSTRUMENTS

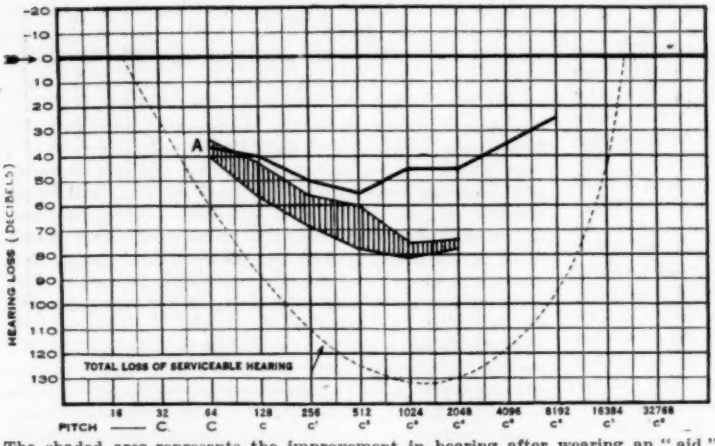
e.g., horns, auricles, speaking tubes

II. ELECTRICAL INSTRUMENTS

(*a*) Carbon microphone instruments on the telephone principle, with single or multiple microphones, and air- or bone-conduction receivers.

(*b*) Instruments with valve amplifiers, and air- or bone-conduction

FIG. 2



The shaded area represents the improvement in hearing after wearing an "aid" for three months during school hours. The improvement occurred to about the same amount in both ears, although only the left was used with the "aid."

receivers: (i) large instruments, suitable for permanent installation in school, church, cinema, or private room, with single or multiple receivers; (ii) smaller portable instruments.

Many examples of all these types are exhibited and it will be observed that every new name does not mean a new principle.

Non-Electrical Instruments

The non-electrical instruments magnify the sound by resonance just like the air in the body of a violin magnifies the note emitted by the vibrating string above it. They also act as collectors of sound to convey it right into the ear. You will have noticed that the elderly gentleman who is becoming hard of hearing puts his curved hand behind his ear to achieve the same object. This class of instrument is excellent for the deafened adult if he will use them. But unfortunately they are rather large and unusual in appearance. Many ladies wear auricles under their hair very successfully, but they are very much more noticeable on a man. The horn type of aid has been estimated to magnify sound by about 12 decibels, chiefly in the middle frequencies, so that a person who had a loss of 60 decibels in the speech range would be raised to 48 decibels when he would hear speech comfortably instead of with difficulty. Speech through a non-electrical aid is more natural than that which can be heard through any electrical aid which has been made up to the present time. Most of the children in the deaf schools are too deaf to be helped by a non-electrical aid, although some can be reached in this way, as those of you who have used speaking tubes for residual hearing classes know. Auricles would assist children in the partially-deaf schools or partially-deaf children in ordinary schools, who for geographical or other reasons are not attending a special school. But the partially-deaf child who can hear conversation and is taught lip-reading does not need an apparatus nearly as much as an adult with the same amount of deafness, who will rarely give the necessary time and attention to acquire good lip-reading. The hard-of-hearing adult, particularly one with high note deafness, who wants to hear natural speech through an inconspicuous instrument, is very difficult to help, particularly if he wants distant sounds magnified more than near ones, as in a theatre.

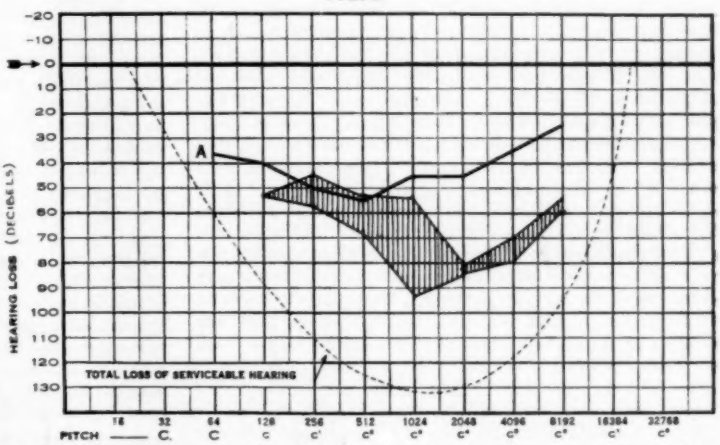
Electrical Instruments

(a) CARBON MICROPHONE INSTRUMENTS ON THE TELEPHONE PRINCIPLE

Most of the electrical hearing aids on the market are of this type. They have been the cause of such a lot of hope and disappointment to deaf people that I shall deal with them at some length. They consist essentially of a microphone, which is single or multiple, an earpiece, a pocket battery, a switch, and connecting flex. Some are fitted with a variable resistance, by means of which their magnification can be varied as required. Minor adjustments of response can be made by altering the kind of carbon in the microphone. These instruments magnify, mostly in the middle frequencies, by about 20–60 decibels according to their size and other characteristics. Therefore they suit people best whose loss is greatest in the middle and do not suit those with maximum high note loss so well, as they cannot hear so intelligibly. Some adults who have become deafened do not seem to mind this, probably because they hear enough to enable them to guess the rest. Others are more critical of the quality of what they hear. The quality varies greatly from one make of instrument to another and is one of the first things to listen for when testing an instrument. But even the best types sound more mechanical than ordinary speech. One of the children put it very aptly when she said that the instrument I had lent her made her teacher sound like a "movie star."

Bone-conduction instruments require special mention merely to emphasise the points made earlier, that relatively more magnification is necessary as the threshold for bone conduction is lower, and that

FIG. 3



The shaded area shows the improvement in the hearing after the first two 2-hour periods (on successive days). There was no improvement in the ear which did not hear.

intelligibility through bone varies greatly with individuals. One of the attractions of the bone-conduction instruments is that the receiver worn behind the ear is less noticeable than one in the ear. The same consideration has led some manufacturers to employ on the air-conduction instruments tiny earpieces with inferior characteristics. These may seriously impair the qualities of the reception and nullify any improvement in the microphone.

When the question of an instrument arises a deaf person should always be advised to go to a dealer who will let the patient take the instrument home on approval for a reasonable fee. Many dealers allow this, and the National Institute for the Deaf keeps a list of them expressly for the protection of the deaf. Personally I advise people to go where they can try more than one make, so that they can compare one with another under the same conditions. They should always go with someone whose voice they know well, so that they can more easily evaluate the quality of the instrument. When at home they should try listening to general conversation, not merely to one person saying slow sentences. They should listen for the amount of background noise; that is to say, the noise which is inherent to the instrument when the battery is switched on, but nobody is speaking into it. This may be considerable, but the deaf person does not always notice it. They should try the effect of moving about with the instrument on. No carbon microphone really likes being moved about or tilted, but some are affected more than others, and it is advisable to test the instrument under the same conditions as those in which it will actually be used. They should see how long the battery lasts. Those who use these aids must make themselves a battery allowance. The best thing to do is to come to an arrangement with somebody who uses a bicycle lamp, for the batteries are useful for this purpose after they are useless for hearing. Inferior makes of battery are false economy. The earpiece should be comfortable, and a larger one as well as a small inconspicuous one should be tried. A new instrument should not be worn for too long at first, as the hearing gets fatigued and the deafness may be apparently increased.

Having pointed out the way to show the defects of these instruments, it is only fair to add that they are used with apparent satisfaction by a large number of people with losses up to 80 decibels, and even, in my own experience, by persons who were born deaf and who were said to be completely deaf, never having heard speech before using the instrument. They are simple, and could profitably be used in education. The advantage of an individual instrument which can be constantly worn and the use continued in adult life is self obvious. Through the generosity of one of the makers I have recently been able to lend suitable instruments of this type to five children who have been completely deaf to speech from birth. Gramophone reproductions of their speech have been taken, together with that of three other children who are not having aids and who will serve for comparison. None of the children are having any special tuition in school. In a year's time their speech will be again recorded, together with the control children, and we shall be able to see whether the former have been helped by hearing their own and other peoples' voices. How much they will learn to interpret what they hear without special tuition only time will show. An intelligent adult of my acquaintance, who has just heard speech for the first time with one of these instruments, is going to begin shortly a course of special tuition by a phonetics teacher in the interpretation of speech sounds and in the correlation between these and the lip-reading she already knows well. We may hope to gain a great deal of help from experiments of this kind.

(*b*) INSTRUMENTS INVOLVING VALVE AMPLIFIERS

Large instruments have ample magnification for the needs of the children with any hearing at all, and most of the instruments, by various devices, can be made to magnify that part of the pitch range where the hearing is most deficient. This is a great advance and is particularly valuable to the group with maximum high note loss. The church and cinema instruments are on the same principle, but without the individual adjustments of tone, although the volume can be varied. It is obvious that if expense is no object a much more complicated and refined instrument can be made if weight is not objectionable and the microphone will not be continually shaken. These instruments fill a definite need in speech education, and for the imparting of knowledge as has been already shown by Dr. and Mrs. Ewing at Manchester University.

Smaller instruments.—These are the newest comers to the hearing aid world, and in my opinion probably will be the most important in the future. It is possible to combine some of the refinements of the larger valve instruments with a reasonable measure of size and weight. The smallest of them is at present larger and heavier than the largest carbon microphone telephone type, but the quality is better and differential pitch magnification much more possible. There are several types already on the market, and I have recently met two deaf physicists who have made very good sets for themselves and who are anxious to help other deaf people. But general experience with this type is at present small. For the deaf child who has so little hearing that he will never appreciate more than rhythm a simpler instrument will suffice, but for the others I shall look forward to the day when they can all have an instrument of this type adjusted to their special requirements, which they will be able to use for speech training and understanding conversation, not only in the school-room but throughout their life.

Methods of Using Hearing Aids for Teaching Purposes

The problem which most teachers have to face is how best to use the instrument with which they are supplied. There is no great difficulty in this if hearing curves are provided for the children and instruments adjustable to suit the individual child. The instrument is used so that the child may hear the teacher's voice and his own attempts to imitate it in the ordinary speech lessons. It will be possible to tell from the hearing curves which child has only such a small patch of hearing that probably he will never appreciate anything more than rhythm, and perhaps the difference between high and low notes. On an examination of the hearing curves of the children in one London school I estimated that 84 per cent. should be able to appreciate amplified speech and 15 per cent. rhythm and gross differences of pitch only. It is lack of rhythm that makes the speech of a deaf child so difficult for the unaccustomed person to understand, and inequalities of pitch which make it sound so unnatural, and the use of a sound-magnifying instrument should help 99 per cent. of deaf children to improve in these points. Nothing is going to replace good teaching, but it is reasonable to hope that these instruments may ease the very difficult task of the teacher of the deaf.

MEDICINE AND THE LAW

Effect of Injury on Cancer

IN Hammond *v.* Gowing, a case under the Workmen's Compensation Act at Norwich county court last month, it was stated that an agricultural labourer had died on August 31st, 1934, from heart failure due to advanced carcinoma of the liver. The widow claimed under the Act on the ground that the deceased met with an injury to his leg on July 21st while chasing a heifer over rough fields in the course of his employment and that this injury accelerated death. The widow and a fellow workman gave evidence that Hammond's leg was swollen after the incident. Dr. Griffiths Williams, who saw the deceased on July 23rd, said he formed the opinion that there was a clot in the popliteal vein behind the left knee; on July 28th there was swelling of the thigh which later extended to the buttock. During August symptoms of cancer appeared; in the witness's opinion the condition of the leg, as seen by him on July 23rd, accelerated death. Dr. F. Temple Grey, pathologist, said the condition described by Dr. Williams was consistent with a blow or strain on the left leg; Hammond must have had a latent cancer on the liver, but it might never have developed; where a latent cancer became active, death usually followed within a month or so; the time factor was important. On the employer's side three medical witnesses disputed the connexion between the fall or injury on July 21st and the death from cancer on August 31st. Mr. Charles Noon, consulting surgeon of Norwich, thought the swelling in the leg was possibly caused by the diseased liver. The popular idea that cancer could be caused by a blow was, he said, entirely wrong; he had never had a case of cancer being speeded up by a blow. Sometimes cancers grew quickly; sometimes they stood still; no one could tell why. Dr. Alastair Robb-Smith, senior demonstrator of morbid anatomy, St. Bartholomew's Hospital, considered that the swelling of the leg was secondary to the liver condition; he thought it likely that the leg trouble was present before the incident on July 21st, though Hammond might not have felt pain. Dr. A. J. Cleveland, of Norwich, said the whole story pointed to death being due to progressive cancer of the liver, and there was no need for the phlebitis of the leg to come into the matter; it was not necessary to have a blow for a latent cancer to flare up; it was more common for it to flare up without a blow. His Honour Judge Rowlands said he would have been glad of a medical assessor in view of the difficult medical questions. There was no direct evidence as to the accident, but he thought the only possible inference was that Hammond met with some comparatively slight injury in chasing the heifer. The judge had no doubt that the trouble due to the clot did bring on an attack of the cancerous liver and did accelerate the progress of the disease so that, but for the presence of the clot, it might well be that the workman would have gone on for years. It might seem unfair that, where a man was suffering from a grave disease, the employer ran the risk of the disease killing the man if he received but a trifling injury; such, however, was the law. His Honour made an award for the agreed sum of £233.

What is the Ideal Tribunal for Medico-legal Issues?

Without in any way criticising the learned judge's decision upon the facts of the Norwich case set forth above—a decision which indeed was based upon the medical evidence produced by one of the parties—one may note how elsewhere the occurrence of these awkward medico-legal problems has raised the question as to the ideal tribunal for deciding them. Writers in the *American Journal of Surgery* for October, 1934, have lately been contending not only that investigations of this kind should be conducted by specialists but also that the results should be adjudicated upon by specialists. In England a coroner can always call upon the aid of a skilled pathologist; but fatal cases form only a small percentage of the annual total of litigation wherein issues of forensic medicine require to be determined. The bulk of such cases concern workmen who claim compensation for injury arising out of and in the course of their employment. Practitioners and consultants, accustomed to giving evidence in this class of litigation, often feel that there is room for reform in the legal system of determination. The ideal of obtaining an investigation of each case by a specialist may not be possible, since every practitioner who has a large panel is daily faced with the necessity of giving medical certificates which are used for the purpose of claiming compensation. He is also frequently asked for a report on his patient's condition. The report must state whether or not the patient is suffering by reason of his accident, whether or not he is incapacitated from performing his pre-accident work, whether he is fit to perform any other form of work and, if he is incapacitated, how long he is likely to remain so. To answer these questions requires a special knowledge, not only of the individual's physical condition, but also of the conditions under which he is expected to work and of the stresses and strains that have to be undertaken during work. In fact, unless the medical adviser has a clear understanding of the work which has to be performed, he is not often in a position to state clearly whether or not the patient is fit for such work. After giving his medical report the practitioner may be subpœnaed to attend the county court to give evidence. In theory he is called to give impartial expert evidence to assist the court to arrive at a just decision. In practice he finds that, having been called by one of the parties to an action, he is treated as a partisan. Counsel for the party that has subpœnaed him endeavours to extract from him only such points as may benefit his client. Cross-examining counsel so frames his questions that the witness's answers shall be construed as contradicting the views previously put before the court. It is notoriously difficult to answer a question on a medical subject in one short sentence; yet the explanations of a medical witness as to why he has arrived at a certain opinion are often frowned upon and he is left feeling that counsel is not helping him to fulfil his oath to tell "the truth and the whole truth." Members of the medical profession feel that when a group of doctors gets together to discuss a case freely amongst themselves, they are able to arrive at a unanimity of opinion. But when the interchange of information and ideas is hampered, as necessarily happens when witnesses are called and examined in the law courts, an apparently wide difference in medical opinion is exhibited to the lay public. Counsel, in the interests of their clients, do all that they can to emphasise this difference of opinion in order to throw discredit upon the opinions expressed by medical witnesses called by the opposing party. As a result, both judge and jury are often forced to the conclusion that the apparent differences of opinion emphasised by counsel are not honest differences and that much of the medical evidence is not to be trusted. Had these

medical witnesses met together round a table and been enabled to discuss all aspects of the case, which include not only the physical condition of a man but also the working conditions to which he is subject, it is probable that "the whole truth" would have been discovered in a calm atmosphere suited to judicial decision. It has been said that doctors make bad witnesses. Medicine being largely a theoretical subject, they are accustomed by their training to look at every phase of disease from several viewpoints. They therefore have difficulty in expressing concise and clear-cut opinions in answer to counsel's questions. Their answers frequently appear uncertain; like all witnesses who are unused to giving testimony in court they cannot give the satisfactory answers which they would wish to make; they may appear to contradict themselves and may even give the impression of disingenuousness because they have been mentally confused by the manner of their cross-examination. In large industrial towns there is now to be found a group of men who have specialised in medical examination for the purpose of the assessment of claims arising out of accidents. These men acquire a special knowledge of working conditions and their reports in general are of more value for the purposes for which they are written than are reports written by the man who has to rely solely on his hospital training. But this is a special form of work and requires special fees; consequently, in workmen's compensation cases, these trained medical examiners tend to be employed by the insurance companies acting on behalf of the employer. There is thus some danger of creating an atmosphere in which it is felt that all the expert medical witnesses are being called on behalf of the employer while the unfortunate workman has to be content with the inexperienced evidence of his panel doctor. The natural prejudice in favour of the underdog is accentuated by this array of talent on the one side. The county court judge, with his duty to hold the balance even and to administer a law which makes employers liable even though they have been in no way at fault, may be inclined to emphasise every point in favour of the workman. Thus it may even seem that the evidence of the less expert witness weighs more heavily than that of the greater. It is inevitable that medical witnesses should feel that the county court judge who lacks a medical training is not the ideal person to judge purely medical questions. It is true that he may ask a medical assessor to sit with him or that either of the parties in the action may ask for an assessor to be summoned. The assessor's duty is to explain medical evidence to the judge if called upon to do so. Not infrequently the judge asks the medical assessor to examine the injured party and to report to him. This examination takes place in the court house often hurriedly and under anything but ideal conditions. Although the judge is in no way bound by the medical assessor's opinion, it must be quite exceptional for him not to accept it.

The judge's very inexperience of medical matters makes it impossible for him to understand much of the evidence that is given before him or to give proper weight to the different theories advanced. In a recent case that was tried in the county court the judge found as a fact that an osteosarcoma of the femur which was 10 cm. in diameter had been caused by a blow on the patella which had occurred 29 days previously but had not been sufficiently severe to interfere with the boy's work. This was not a matter of giving the plaintiff the benefit of the doubt; the judge found that the medical evidence had proved that the sarcoma arose from this blow. In other words, where medical research spread over centuries has failed, a judge, in less than two hours, discovered the cause of cancer. No reflection whatever is meant to be cast upon the learned judge. The members of the High Court and county court benches apply their skill with signal success in general to the solution of technical matters. They do not decide without some foundation of evidence submitted in open court. It is the system which is at fault—the system which allows skilful counsel to make the best of their cases and which leaves the decision of an intricate medical problem to a tribunal not equipped with what might be supposed to be the necessary scientific training. It must be realised that, when the county court judge makes a finding of fact, the parties cannot appeal against his judgment to a higher court.

What then is the ideal tribunal for determining these technical issues? It has been suggested that all medical questions should be decided wholly by a medical board. Whereas there is much to be said in favour of allowing the final decision to rest with a medical man there is also much to be said against it. Probably a better method of dealing with medical evidence would be that each of the medical opinions sought should be submitted in writing to the court. These opinions should be considered by the medical assessor and from them he should draw up a comprehensive report showing all points on which there is unanimity of opinion and points on which there is difference of opinion. If the differences of opinion are marked, the medical witnesses should be summoned to court to give evidence on these specific points and the examination and cross-examination should be confined to these points. Each medical witness so summoned should be told beforehand the subject on which his further opinion would be sought. The medical reports submitted to the court should follow a prescribed form so that they would be easy to follow and compare one with the other. The nature of the disease should be described in detail; its relationship to the alleged accident should be clearly brought out. The question of present capacity for work should be set forth and the reasons for capacity or incapacity should be stated in detail. A clear prognosis should also be given. If this cannot be given the reasons for withholding it ought to be stated. If reports on these lines were submitted, the real opinion of the medical men concerned could be obtained without any of the confusion of thought that arises in the witness-box. In submitting his report to the judge the medical assessor should draw attention to the relative scientific value of the theories advanced. Already the High Court is moving in the suggested direction by its "new procedure" which enables an expert's report to be made a document in the case (subject to challenge by the parties) and authorises the judge to have regard to it as conclusive evidence.

There is nowadays a growing literature on the merits of non-judicial tribunals. Lord Hewart and other legal writers have complained that the jurisdiction of the law courts is being improperly ousted by administrative inquiries such as are conducted by the Ministry of Health in connexion with housing and town planning. Questions of workmen's compensation have been retained within the compass of the county court judge's authority, but the determination of standards in the social services is increasingly allotted to the officials of the departments concerned. When, for example, is a house unfit for habitation? Is this a legal question for a judge or an administrative question for a minister concerned with policy?

STATUS OF OSTEOPATHY

The B.M.A. Memorandum

ON Dec. 11th, 1934, a Bill for the registration and regulation of osteopaths passed its second reading in the House of Lords and was referred to a Select Committee with leave to hear counsel (see THE LANCET, Dec. 22nd, 1934, p. 1420), after a debate of which the general trend was summarised in a leading article on page 1399. The report of a special committee of the British Medical Association, prepared for its coming Council meeting, has now been made public (Brit. Med. Jour., Jan. 5th, 1935, Supplement, p. 1).

OSTEOPATHIC THEORY

The memo begins by considering the basis of osteopathic theory. This is claimed by its exponents to be an explanation of disease which is not accessory to medicine but entirely independent. The basic conception of the founder of osteopathy (Andrew Still, 1828–1917) was that the primary cause of every disease is interference with blood supply or with nerve function, or both, caused by a misplacement of one or other of the bones of the spinal column. Many osteopaths have been compelled to modify this belief and criticise the chiropractor who, it seems, still adheres to the original thesis. In an application for a Royal Charter three years ago osteopathy was defined as "that system of healing which, regarding the structural integrity of the body as the most important single factor in the maintenance of health, concerns itself primarily with the correction or adjustment of all structural defects which in any way interfere with the natural recuperative power of the human body." The public belief that osteopathy is essentially a form of massage was repudiated by Still who said: "The osteopath never rubs, he takes off any pressure from blood vessels or nerves by the adjustment of any displacement . . ." The chief feature of osteopathic diagnosis is the general and detailed examination of the spine, followed if necessary by regional examination of neck, ribs, limbs, thorax, abdomen, &c. "Lesions" are located by inspection, palpation, and examination of the range of movement.

Osteopathy thus claims to have discovered a hitherto unrecognised and highly important cause of disease. It asserts that the "osteopathic lesion" is responsible for most of the diseases of the human body; that the existence of this "lesion" can be determined by anyone who has been trained in osteopathic methods; that this "lesion" can be overcome by manipulative or allied methods; and that its removal is followed by the disappearance of the signs and symptoms, and the restoration of the patient to health. Where, asks the memo, is the evidence for this osteopathic theory? Upon the osteopath rests the onus of proof and osteopathic literature is almost devoid of scientific investigation. There is not a vestige of evidence that the osteopathic spinal lesion is the principal cause of organic disease in all its manifestations. Modern medicine and osteopathy cannot both be right, and if osteopathic theory is sound what is needed is not registration, but revolution.

OSTEOPATHY IN PRACTICE

There are, says the memo, indications that many advocates of osteopathy are retreating from these disturbing implications of osteopathic theory and are placing emphasis on the value of manipulative methods of treatment rather than on its theoretical basis. But manipulation is one of the methods of treatment employed by medical practitioners, and to criticise the theory of osteopathy does not involve a condemnation of manipulation as a valuable method of treatment in certain conditions. When however osteopaths speak of osteopathy merely as a method of treatment the position is entirely different from the claims made on its behalf. One recent exponent speaks of "bloodless surgery and drugless medicine"; another states that "all modern methods of treatment are employed except drug medication" and "this exception is not absolute." In America the student of osteopathy is said to spend on anatomy, physiology, medicine, surgery, gynæcology, pathology, and bacteriology as many hours as does the medical student. Thus the fundamental opposition to the methods of scientific medicine appears to have been deserted by this class of osteopath for a desire to incorporate all that the medical curriculum can offer excluding drug therapy—and even the exclusion of materia medica is becoming less evident. The practising osteopath claims to cover the whole field of general medicine and wishes the public to regard him as a healer equipped with full medical training. There is then no reason why he should not follow the same procedure as the student of scientific medicine and satisfy the G.M.C. that he is possessed of sufficient knowledge and experience of the diagnosis, treatment, and prevention of disease. What system of medicine he practises thereafter will not be prejudiced by this.

THIRTEEN GROUNDS FOR CRITICISM OF THE BILL

The B.M.A. memorandum goes on to summarise the provisions of the Bill and concludes with a series of thirteen comments which are reproduced here verbatim, the italic headings being our own:—

The Bill embodies a New Principle.—That this Bill involves an entirely new principle, in that it endeavours to place a "system of treatment" under control; to create a controlling authority, the members of which are concerned with one form of treatment only; and to substitute for freedom and the opportunity of advance in any direction found desirable an official organisation with an interest to promote the success of a limited and particular cult.

It does not define Osteopathic Practice.—That there is no definition of osteopathy or of what is included in osteopathic practice, the new Board being given unlimited power to define "treatment commonly given" by osteopaths, as well as other "necessary measures."

It would place a Restriction on Medical Practice.—That although the General Medical Council is expressly prohibited by statute from refusing registration to any qualified medical practitioner by reason of his "adopting the practice of any particular theory of medicine or surgery," every registered medical practitioner will be prohibited from practising within the undefined field of "osteopathy," and may be fined £50 if he uses any treatment judged to be "osteopathic."

That if the field of osteopathy is to be taken to include practically the whole field of medicine (as is suggested by the curriculum set out in the Second Schedule) medical practitioners may be precluded, on a strict interpretation of the Bill, from practising medicine; that if, on the other hand, osteopathy is to be regarded as a system of treatment, then registered medical practitioners will be precluded

from practising certain methods of treatment should they desire to do so.

A Monopoly is Sought.—That though in this country anyone may practise medicine lawfully, provided that he does not hold himself out to be a registered medical practitioner when he is not so registered, a monopoly is sought for in the practice of "osteopathy."

And a Monopoly for an Inferior Set of Practitioners.—That this monopoly may be granted to: (1) persons who have received no training whatsoever but have merely practised osteopathy during three years; (2) persons with certificates granted in Dominion and foreign centres, including America; and (3) persons who have been trained in approved (but at present non-existent) British centres and passed a recognised examination. Therefore, there will be set up in addition to qualified medical practitioners (as at present) who have passed through the full ordinary medical course and have successfully passed the appropriate tests, an alternative and inferior set of practitioners who may (or may not) have had some training in some medical sciences and subjects, but in whose case the course of training will have been invariably shorter, biased throughout, and less complete, and who will have satisfied lesser and different requirements.

Duplication of Registration.—That there will be a duplication of registration of those practising the healing art: (*a*) the General Medical Council acting under the authority of the Privy Council; (*b*) the Osteopathic Board acting under the Ministry of Health.

No Medical Practitioner on the Board.—That there is no provision for any registered medical practitioner being a member of the Board, and that the Ministry of Health and "Scottish Board of Health" (sic) are expressly forbidden to appoint any such practitioner, and that the Board will, therefore, be without any intimate knowledge of medical science or practice.

Dual Function of the Board.—That the Osteopathic Board is to be not merely a registering and disciplinary body but also a licensing body and an examining body.

The Osteopath to Sign Certificates of Birth and Death.—That registered osteopaths other than those admitted under Clause 6 (3) (i.e., on evidence of a foreign qualification) may legally sign certificates of birth and of death, and, if duly licensed, may administer anæsthetics and perform minor operations.

To administer Anæsthetics and perform Minor Operations.—That the licence to administer anæsthetics and perform minor operations will be given by a Board containing no medical or surgical expert, and that with this Board will rest also the decision as to what constitutes a minor, and what a major, operation.

Two Types of Registered Practitioner.—That there is thus constituted a backdoor into medical practice and a necessity for the public to distinguish between two types of registered practitioners, thus defeating the purpose of the existing Medical Acts.

Opening for other Healing Cults.—That if these conditions are established there would seem to be nothing to prevent any number of "healing cults" seeking and obtaining separate registration and similar powers.

The Osteopath's Training

The Second Schedule to the printed Bill sets out the subjects in which osteopaths are to be qualified and minimum hours of study in each thereof. The number of hours prescribed for the study of any subject may be reduced not more than 30 per cent., but the total number of hours prescribed shall not be reduced.

	Hours.
Anatomy (descriptive, regional, applied, surgical and dissection) and pathological	600
Embryology	70
Chemistry (advanced to include organic and physiological chemistry and toxicology)	300
Histology	180
Physiology	300
Pathology	240
Bacteriology	150
Hygiene	60
Hydrotherapy	16
X radiance and electrical diagnosis	36
Dietetics	32
Osteopathy:	
(A) Principles of osteopathy	
(B) Osteopathic technique	
(C) Practice of Osteopathy, to include diseases of nervous system, Psychiatry, Alimentary Tract, Heart and vascular system, Genito-urinary Diseases, Ductless glands and Metabolism, Respiratory Tract, Bone and Joint Diseases, Corrective Gymnastics, Acute and Infectious Diseases, Pædiatrics, Dermatology, Syphilis, Diagnosis (Physical Laboratory and Differential), Clinical Practice Case Recording	1466
Minor Surgery, with emphasis on fractures and dislocations, principles of surgery, and surgical diagnosis, Orthopædic, Orificial, Clinical, with Anæsthetics	400
Eye, ear, nose and throat	180
Gynæcology	160
Obstetrics	200
Professional Ethics and Efficiency	16
Jurisprudence	16
Total	4422

The memorandum to the Bill speaks of the practice of osteopathy as a developing system of treatment of disease by manipulative methods; the 1956 hours allocated to subjects other than "osteopathy" may give a clue to some of these developments.

ROYAL LONDON OPHTHALMIC HOSPITAL EXTENSION. The King has consented to open the new extension at the Royal London Ophthalmic Hospital (Moorfields) being named the King George V. extension. It is hoped that the extension will be ready in March. If it is to be opened free from debt, the sum of £8000 must still be raised. A gift of £4500 can be claimed if the debt is wiped out before the opening.

BIRMINGHAM CONTRIBUTORY SCHEME.—An extended benefit scheme to enable middle-class people to meet expenditure incidental to hospital or nursing-home treatment has been put forward. In return for a specified contribution in advance subscribers or their dependent relatives will receive grants varying according to the contribution. Payments of sixpence a week qualify a contributor to £16 in any 12 consecutive months; sevenpence a week to £22; and one shilling per week to £28.

CORRESPONDENCE

THE R.M.B.F. CHRISTMAS APPEAL

To the Editor of THE LANCET

SIR,—It is a great pleasure to me to be able to inform you that the total result of the Christmas gift appeal for the Royal Medical Benevolent Fund amounted to £668 14*s.* 9*d.* Owing to the generosity and whole-hearted support given by your readers we have been able to distribute Christmas gifts (30*s.* each) to all of our poorest beneficiaries. I have been very greatly impressed in receiving the many letters of thanks from the recipients. All express much gratitude and real sincerity of thanks. To many the gift has brought unexpected comforts and pleasures, to others in their loneliness a sense of friendship. I am convinced from my personal experience in dealing with the work that the effort so kindly made by you and your readers in raising this special gift fund at Christmas time has been well worth while.

I thank all for their coöperation and remain

Sir, yours faithfully,

THOS. BARLOW,
President, Royal Medical Benevolent Fund.

11, Chandos-street, Cavendish-square,
London, W.1, Jan. 2nd.

MORTALITY FROM PERNICIOUS ANÆMIA

To the Editor of THE LANCET

SIR,—Dr. A. Bradford Hill has so fully quoted my views on the prognosis of pernicious anæmia (THE LANCET, 1934, i., 1407) that I trust you will allow me to comment on his important paper on the mortality from pernicious anæmia in England and Wales, published in your last issue (p. 43). It is clear from Dr. Hill's figures that patients with pernicious anæmia are not living as long as they ought to do if their disease can be completely controlled by treatment. The point at issue is whether the excessive mortality is all preventable and due to inefficient treatment, or whether it is in part due to a tendency for the disease to become refractory to treatment after a time. The expectation of life is more conspicuously diminished in the later age-groups, and it is also suggested that treatment may become progressively less successful with advancing years. I do not think that Dr. Hill's figures will come as a great surprise to hæmatologists, though I must admit that the results are even worse than I had feared, but I am still quite strongly of the opinion that they are explained by inefficient treatment. My reasons for holding this opinion are as follows:—

1. Apart from severe intercurrent illness, which might in itself have been fatal in a normal subject, I have never seen a patient with pernicious anæmia become refractory to treatment, and no patient who has remained regularly under my care after a successful initial course of treatment has subsequently died from pernicious anæmia.

2. Minot, during his recent visit to this country, stated that he had been able to keep under observation the majority of the original series of patients treated with liver in 1925–26, and of those kept under observation none had died from anæmia or paralysis.

3. Wilkinson, whose experience of the treatment of pernicious anæmia is unique, has reported the results in a group of 264 patients treated with desiccated stomach over a period of three and a half years. None had relapsed with regard to anæmia or cord symptoms, and only four had died—one from heart disease, two from cancer, and one from pneumonia (Proc. Royal Soc. Med., 1933, xxvi., 632). From conversation with Dr. Wilkinson I understand that his results remain equally satisfactory now two years later.

All these observations deal with what I call "pedigree cases"—i.e., patients who are seen at intervals of four to six weeks, when the hæmoglobin is estimated and the dosage of effective substance is adjusted to maintain the blood count at a normal level. The results are very different when patients are not supervised in this way, and of this difference Dyke and Harvey have given a very pretty demonstration (THE LANCET, 1933, ii., 59). They traced 52 patients who had been treated for pernicious anæmia at the Royal Hospital, Wolverhampton, during the previous five years. Of these, 19 had attended regularly at the pathological department for examination of the blood and report to the doctor who was carrying out the treatment, while 33 had failed to attend in this way. Of the 19 who had attended regularly, all were well and able to carry on their business. Of the 33 who had been left to their own devices, only 9 were well and able to carry on with their affairs—15 were dead, 7 were invalids, 2 were lost sight of.

Uniformly good results in the treatment of pernicious anæmia can be obtained, and can only be obtained by supervision, hæmatological control, and a sufficient dosage of effective substance to maintain the blood count constantly at a normal level. This is not the place to discuss how all this can best be managed, and indeed it has already been admirably discussed by Dyke and Harvey (loc. cit.). As I have said on a previous occasion, it is really no kindness to cure a patient of pernicious anæmia so that he may subsequently die of spinal paralysis. Initial treatment is easy, it is over maintenance treatment that the patient comes to grief. Patients with pernicious anæmia are often old and foolish, and may look upon efforts at supervision as meddlesome or mercenary. In the treatment of pulmonary tuberculosis by artificial pneumothorax the value of the regular visit of the patient to the doctor for refills is at any rate commensurate with the rest to the damaged lung. The cheapest effective maintenance treatment of pernicious anæmia to-day is the injection of an intramuscular extract of liver at intervals of two to six weeks. A wider adoption of this method of treatment, and the consequent tightening of control over patients with pernicious anæmia, who are so prone to neglect treatment when oral remedies are prescribed, may be expected to lead to improvement in the present unsatisfactory state of affairs.—I am, Sir, yours faithfully,

L. J. WITTS.

St. Bartholomew's Hospital, E.C., Jan. 5th.

THE DIAGNOSIS OF LATENT SCURVY

To the Editor of THE LANCET

SIR,—In the *Biochemical Journal* of November, 1933, Harris, Ray, and Ward reported that ingestion of a large amount of ascorbic acid (600 c.cm. orange juice) led to a striking increase in the reducing power of the urine, corresponding to about ten times the normal ascorbic acid output. This experiment was repeated here in the Hygienic Institute, the experimental subject being given about 380 mg. ascorbic acid in the form of hip extract, but the result was negative; there was no increase in the reducing power of the urine.

When the experiment of Harris and his colleagues was confirmed by other investigators, it seemed that

our negative result could only be attributed to defective absorption or to retention of the ascorbic acid by the experimental subject. Such retention would naturally be conceivable in persons suffering from scurvy—whether manifest or latent—since the depôts of ascorbic acid are emptied in both cases, and presumably have to be refilled before excretion takes place. To ascertain whether the latter possibility was the decisive factor in this instance, the same subject was given the juice of seven lemons daily for five days, and the experiment was then repeated, with ingestion of the juice of fifteen lemons, estimated by titration to contain 250 mg. ascorbic acid. This time there was in the third hour a distinct increase in the reducing power of the urine, for this was increased to seven times the initial value. Another experimental subject gave a positive reaction in the ascorbic acid tolerance test (422 mg. hip extract increased the reducing power of the urine nine times); this person was submitted to the same test after ten days of ascorbic acid-free diet, and then showed no reaction to an intake of 450 mg. ascorbic acid in hip extract. (At this time he showed minor hæmorrhages from the gums.)

These experiments demonstrate that ingestion of relatively large amounts of ascorbic acid may give rise to a very great increase of reducing substances in the urine. That this is due to excretion of ascorbic acid is an obvious conclusion. It is as yet unsettled, however, whether the daily output of reducing substances in the urine is due essentially to ascorbic acid, as held by Harris, Ray, and Ward. It is significant that the rise in the output of ascorbic acid cannot be produced in all individuals, and it seems reasonable to assume that by a tolerance test with ingestion of substances containing ascorbic acid it may be practicable to disclose a scorbutic condition at an early stage. It is of great importance, then, to develop the method thoroughly for clinical use, and in particular to establish the minimum of ascorbic acid intake that will give a distinct increase in the ascorbic acid excretion through the kidneys in healthy persons on an adequate diet. Experiments to elucidate these problems are now being carried out.

We are, Sir, yours faithfully,

HELGE LUND,
BERNHARD SPUR.

Hygienic Institute of the University of Copenhagen, Dec. 31st, 1934.

TESTS FOR DISINFECTANTS

To the Editor of THE LANCET

SIR,—A leading article in your issue of Nov. 17th, 1934, on the Chick-Martin test for disinfectants, suggests that tests made with "naked" bacteria are non-practical, remarks on "the chaos of surgical disinfectant testing," and concludes that there are, in fact, "no methods at all which can claim authority or official recognition." Without claiming so much for my method I should like to recall attention to a rat-tail test which I introduced many years ago (Zeits. f. physiol. Chem., 1918, cii., 275) and which in its simplicity represents an adequate test for the action of disinfectants on the skin. Of the long tails of rats, pieces half to one centimetre in length are cut out and put straight into the disinfectant to be tested. After 1, 2, or 10 minutes the piece is taken out, washed in broth and dropped into a melted agar tube. After moving this a little the whole contents are poured into Petri dishes and placed in the incubator at 37° C. After 24 hours the colonies are counted.

The controls always show more than 50,000 colonies. The following is a summary of the results of one minute's exposure to various disinfectants:—

Disinfectant.	Per cent.	Colonies.
Propyl alcohol	35	230
	50	45
	70	700
	100	650
Ethyl alcohol	35	> 50,000
	50	> 50,000
	70	200
	100	1,400
Iodine	0·02 % in 30 % Eth. alc.	> 50,000
	1 % in 60 % Eth. alc.	5,000
	5 % in 93 % Eth. alc.	450
J–JK	0·67	5,000
Carbolic acid	2	20,000
	4	250

Disinfectant.	Per cent.	Colonies.
Silver nitrate	0·1	6,000
	0·3	1,500
	1	500
	2	70
Corrosive sublimate	0·1	> 50,000
	0·2	170
Dakin's solution		13,000
Formaldehyde	2	10,000
	4	500
	40	140
Phenosalyl	1	30,000
Hydrogen peroxide	10	4,000
	30	4
Resorcin	5	7,500
	10	400

It was evident that propyl alcohol, which had never before been used for disinfection, was the most effective and dependable disinfectant as demonstrated by this very severe test on probably the most dirty skin which can be found in nature. Also ethyl alcohol worked well, but only within a narrow limit of concentration, about 70 per cent. All the other disinfectants were only good in concentrations too high for daily use. In my paper was demonstrated the importance of surface tension in skin disinfection.

Since then propyl alcohol has been largely used in Denmark (and in no other country so far as I know), and has found its way into the daily use of patients with skin affections such as acne and furunculosis, and into commercial preparations for the hair. Only last year, when the Danish distilleries of ethyl alcohol caused an increase in the price of propyl alcohol (imported from Germany), did the universal use of it go down a little. Surgeons have told me that for special wound infections—e.g., *B. pyocyaneus*—it is of great effect.

I am, Sir, yours faithfully,

JOHANNE CHRISTIANSEN.

Copenhagen, Dec. 21st, 1934.

REFRACTIVE ERRORS IN RIFLE SHOTS

To the Editor of THE LANCET

SIR,—Some years ago (THE LANCET, July 12th, 1924) I made some suggestions with regard to glasses for rifle shots, together with some notes on the refraction of a certain number of shooting men. Since then I have refracted a good many more, and it may be of interest to summarise the findings.

Out of 105 cases I found that 7 were emmetropic, 53 hypermetropic, 31 myopic, and in 14 mixed astigmatism was present. Of the hypermetropes, 24 took a plain sphere, 9 took cylinders only, and 20 sphero-cylinders. The myopes were made up of 4 plain spheres, 11 cylinders only, and 16 sphero-cylinders. The majority of all the cases needed less than one dioptre correction, but others of course required a much higher value. The extremes were as follows:—

Plus spheres only +2·87, improving 6/18 to 6/6.
Plus cylinders only +1·25, improving 6/12 to 6/5.
Plus sph. cyls. Cyl. +0·75, sph. + 1·75, 6/24 to 6/6.
Minus spheres only −6·0, improving less than 6/60 to 6/5.
Minus cyls. only −1·0, improving 6/9 to 6/4.
Minus sphero-cyls. Cyl. − 2·0, sph. − 4·50, 2/60 to 6/5.
Mixed astigmatism—
Cyl. − 5·0 sph. + 4·50, 6/36 to 6/6 (1).

Improvement of visual acuity to 6/5 is satisfactory and to 6/4 very satisfactory. Some can get 6/3 but this is very unusual. It must be remembered that in the above I am dealing with monocular vision only.

Most of the cases described used the service rifle on the open range, but some were miniature shots only. Among the open range men were five previous winners of the

Queen's or King's Prize. Two of these, incidentally, had an amblyopic eye.

Before 1909 or 1910 the full range shot had to focus three objects more or less simultaneously—i.e., mark, foresight, and backsight. When the hindsight used was a bar, as against a notch, white lines, to allow for wind deflection, were drawn on it, and the focusing of these presented a good deal of difficulty to the hypermetrope. Nowadays, with the peep sight, using an aperture of anything from 0·03 to 0·08 inch in diameter, only two objects have to be picked up—i.e., the mark and the foresight. As the foresight is about 32 inches distant from the eye, both points cannot be in perfect focus at the same moment and it is the almost universal habit of rifle shots to concentrate, at the instant of pressing the trigger, on the foresight, trusting to the hold to keep true to the point of aim on the target.

I have called the point of aim the mark, but actually this is a very variable item, differing in many ways in different men. Some aim into the aiming mark, some just below, some well below. Others "sense" the central point using, they say, the four corners as radii. Others again take the central point of the top or bottom edge of the target as the point of alignment. It is impossible to decide between the respective advantages of all these as their various upholders are all equally good shots. Whatever the distant mark taken the near one is always, in all cases, the tip of the foresight centred in the middle of the peep and I have found that, in the hypermetropic presbyope that it is frequently difficult to define it with the clarity desired. The sharpness can be obtained in nearly every case by cutting down the size of the aperture; but this is very undesirable, for there can be no question that, within limits, the aperture should admit of as much light as possible passing through it. Therefore, in the presbyopic hypermetrope an addition to his distance vision correction is called for and + 0·5 or even + 0·75 will give a square cut, sharply defined tip of the foresight, though at the expense of some blurring of the target. This blurring takes a little while to get accustomed to, and some people, particularly those with very slight hypermetropia, never settle down to it. In bright lights, where a medium aperture can be used, it would not seem so useful as in dull ones where a large one is needed.

Theoretically, the myopic presbyope might use the additional correction but I have no data on this side of the question, and the loss of definition of the target, is, I think, more serious to the myope than to the hypermetrope.

As I pointed out in my paper, it is not so much the question of improved visual acuity, important as this is, that one hopes to obtain by prescription of glasses, but the relief of fatigue. Most men, if they can see fairly well, can fire a few shots without feeling much strain, but when it comes to 7, 10, 15, or 20 consecutive ones there is an intense strain, not only on the eye but on the nervous and muscular system generally, and the oculist's purpose is to relieve the ocular part of this as much as possible—i.e., to put the eye under the best conditions to carry on for a long period without having to undergo unnecessary strain.

Glare, too, has to be considered, and the use of tinted glasses will help in modifying this. Each man has his own taste in the matter. I find that Crookes A or B are quite satisfactory in England, but some men prefer amber, Fieuzal, green or other glasses. Possibly the darker shades might be objected to on the ground that the pupil might tend to dilate and so lose the advantage of a diminished cone of rays; but this would be too infinitesimal to be a serious objection.

No matter how acute the vision is, or is made to be by glasses, it must never be forgotten that the vision is only one of the many components of good shooting and that though it *is* very important, the keenest eyesight does not complete the make-up of the good shot.

I am, Sir, yours faithfully,

Cannon-street, E.C. C. WYNN WIRGMAN.

RUPTURE OF THE CÆCUM

To the Editor of THE LANCET

SIR,—In THE LANCET of Oct. 13th, 1934 (p. 810), Dr. W. N. P. Wakeley described a case of perforation of the cæcum due to annular carcinoma of the sigmoid flexure of the colon. In Vienna in 1932 I saw several cases of this type. The explanation given was that the primary dilatation occurs just proximal to the obstruction, but that secondary hypertrophy in this region of the wall follows. As the lesion progresses there is a more rapid dilatation of the ascending colon, due to the effect of the lesion and aided by the hypertrophy of the descending colon acting against the cæcum and the ileocæcal valve. The combined effect is to cause rupture of some part of the ascending colon, usually at or near the cæcum, and always in the longitudinal band.

I am, Sir, yours faithfully,

Philadelphia, Dec. 22nd, 1934. WM. STEINBERG, M.D.

HUGHLINGS JACKSON AND THE SUBCONSCIOUS MIND

To the Editor of THE LANCET

SIR,—In his Schorstein lecture (THE LANCET, Oct. 27th, 1934) Sir E. Farquhar Buzzard entertains us with personal reminiscences of Dr. Hughlings Jackson and his influence on neurology. He quotes something that Jackson wrote "nearly 50 years ago," adding "before the 'subconscious mind' had been invented!" This is surely a slip. Unconscious mental action had been recognised and written about many years before this. To the best of my knowledge, Dr. W. B. Carpenter was the first to speak of it definitely and distinctly. He introduces a lecture delivered at Manchester in December, 1871, on "The Unconscious Action of the Brain" by telling his audience that he is about to describe processes at the depth of the mind. He had lectured on the same subject at the Royal Institution five years before, and deals at length with "unconscious cerebration" in his book on Mental Physiology, 1874. I think that he does not often get the credit that is due to him. Dr. Charlton Bastian also wrote of unconscious mental processes, saying that mind was more extensive than consciousness, and in his "Brain as an Organ of Mind," he refers to others who supported him, including Bain and Spencer. Occasional examples of unconscious mental action had often been recorded as curiosities, but were not systematically described and understood until physiology advanced and joined forces, and Dr. Carpenter became its chief prophet.

I am, Sir, yours faithfully,

F. LUCAS BENHAM, M.D., M.R.C.P.

Semaphore, South Australia, Dec. 5th, 1934.

ST. JOSEPH'S HOSPITAL, PRESTON.—Lord Stanley has opened a new wing at this hospital which is to be mainly used for maternity cases.

PANEL AND CONTRACT PRACTICE

The Care of Maternity

IT is clear from the regulations that an insurance practitioner is not required to give an insured person free of charge :—

(i) attendance in labour resulting in the issue of a living child ;
(ii) attendance in labour after 28 weeks of pregnancy resulting in the issue of a child, whether alive or dead ;
(iii) attendance within ten days after labour in respect of any condition resulting from labour.

The obvious intention of exemption (i) is to exclude the ordinary confinement from the scope of insurance practice. Pregnancy is in a different category to illness. Illness may come upon the worker unforeseen at any moment. It is therefore right and proper to insure against the financial loss resulting from it and to provide medical help to combat its effect ; but the pregnant worker knows of her condition long before incapacity results, she has several months in which to provide for her confinement. The necessity for insurance is not therefore nearly so strong as in the case of illness. Moreover, as pregnancy is not equally common amongst all classes of women, the responsibility of the practitioner would prove to be quite different for one class (the married) than for another. For this reason, too, midwifery is not included in the terms of service.

Attendance at an ordinary abortion is however included, for this generally takes place before the seventh month of pregnancy and the fœtus is more often dead than alive. The condition is not excluded by any one of the three situations defined above. It has however been held that a practitioner would be entitled to charge (and in fact one doctor did so charge) for attendance on a late abortion, when the immature infant was sufficiently alive at birth to take a breath or to move a limb. This was considered by the tribunal which heard the case to be rather sharp practice on the part of the doctor, for the child only took a breath or two ; but the wording of the regulations makes it quite clear that a charge can be made in such a case. This condition, rare though it undoubtedly is, may be regarded as the connecting link to situation (ii) which definitely provides for charging a fee for attendance on a miscarriage (i.e., after seven months) whether the fœtus is alive or dead. Such cases may require as much supervision and often give more trouble than a full-term confinement.

The attendance required for the ten days of puerperium (iii) is by custom included in the confinement fee. Extras incurred in that period, such as (say) pneumonia or burns or heart failure, would not be charged in any case, and therefore not in the case of an insured person who would be entitled to free attendance for such conditions unless they were attributable to the confinement.

It will now be apparent that the insured pregnant woman is entitled under the Act to modern antenatal treatment if she demands it, and the question arises whether the medical profession should not take stock of the position and consider whether the best interest of the public is being served in the treatment of pregnant women. Nowadays they are apt to imagine themselves seriously ill ; they must not do this or that ; they are on the way to become neurotic persons, out to meet trouble half way. Many insurance doctors think that all this talk about antenatal care—pelvimetry, radiography of presentation, and so forth—is undermining the moral stamina of the women, in order to discover evidence of eclampsia a week or two earlier (and often then not early enough to save life), or of a minor contraction which may or may not lead to difficult labour. It is perhaps fortunate that up to the present X ray examination of antenatal condition is still outside the terms of service, for beyond possibly deciding whether there is a twin pregnancy or not, and whether a vertex is presenting, their use in maternity may be most misleading. When it is remembered that the process consists of casting shadows on sensitised films, it will be realised that distortion will inevitably be produced if the rays are not exactly perpendicular to the film and a slight deviation from the vertical will produce an erroneous suggestion of overlapping, with unnecessary worry for the patient as well as the doctor. The competition between clinical methods and scientific apparatus goes on in maternity work as elsewhere in medical practice, but so far clinical methods appear to hold their own, and it has been well said that the fœtal head is still the best measure of the pelvic brim.

Oiling the Wheels

The clerk of the London insurance committee has sent to every doctor on the London panel a personal letter soliciting his help in the administration of medical benefit. He points out quite frankly the difficulties which arise in his department through doctors failing to do the things they should do or doing the things they should not do. This is the second letter of its kind ; one issued in June, 1934, dealt solely with sending in forms of medical record. The reception of this letter, the clerk says, was so good and the results so satisfactory that he can now deal with other subjects. But "there is still rather more dilatoriness in forwarding to the committee the medical records in respect of insured persons who are transferred than there should be" ; failure to send in the record card means that the committee cannot send the card either to the new committee which is asking for it or to the new doctor requiring it, if the transfer is in the same area. The doctor to whom the patient has transferred has then to continue using the temporary F.M.R. and to treat the case without any previous history. This is likely to give the committee a bad name, for both the patient and the new doctor will blame it for the delay.

In the matter of removals from practitioners' lists a new procedure is to start this month in London. The old scrip of flimsy paper (Form R 81) is to disappear and a green card (Form GP 34), the same size as an F.M.R., will take its place. It will be possible to put GP 34 in the live filing cabinet, which will then contain all F.M.R.'s for persons for whom the doctor is responsible for treatment, as well as green cards for all those who have been removed. This should facilitate the early despatch of F.M.R.'s required by the committee. The system is working satisfactorily in other areas. With regard to acceptances, the clerk points out that delay to send them to the committee within seven days, as required by the allocation scheme, is not only a breach of the terms of service, but may result in the loss of a quarter's remuneration for cards not received in time. Some practitioners, he says, retain cards for weeks and perhaps months before sending them to the committee, whose staff often have to cope at the end of a quarter with a flood of acceptances which should have been spread over the quarter.

The prescribing of medicine on N.H.I. forms for people not entitled to medical benefit is frequently found to occur. This happens sometimes, the clerk says, in respect of people who have been removed from practitioners' lists, and it is sometimes said that the person has come to the surgery and has represented that he is still entitled to medical benefit. It may be that he is, and that an error has occurred somewhere. The practitioner concerned, being mindful of the offence of fee-charging, gives the patient advice gratuitously, but at the same time issues a prescription to enable medicine to be obtained at the cost of N.H.I. funds. "I am sure," the clerk remarks, "you will not mind my saying that this is wrong." The terms of service are quite clear on the point, and Clause 7 (2) says that if a person who applies for treatment as an insured person is unable to produce a medical card or produces a card which the practitioner has been notified is no longer valid (e.g., that the name of the person has been removed from his list), he may demand and accept from the applicant a reasonable fee for any treatment rendered, including any drugs or appliances supplied. The practitioner must then render the applicant an account or give him a receipt in either case on the prescribed form. The clerk goes on:

"The main point of this paragraph is to state that the practitioner must not, in the circumstances, prescribe medicine at the cost of N.H.I. funds. The committee are required to check a proportion of the prescriptions issued by practitioners, and if it should be found that prescriptions have been issued improperly it may be that the cost incurred may have to be recovered from the practitioner. This is an unpleasant job and can best be prevented by practitioners refraining from prescribing for persons whom they have reason to believe are not entitled to medical benefit."

The illegibility of prescriptions also comes up on two grounds. The chemist may give the wrong drug or dose through misreading the writing. Furthermore, these prescriptions have to be priced. "You would be surprised," the clerk says, "to see some of the specimens which the staff here have to endeavour to translate into terms of shillings and pence. . . ."

PUBLIC HEALTH

Learning to Feed the School-child

THERE is a well-organised service which supervises the feeding of infants and provides treatment for the many conditions which hinder the young child from thriving. Dr. A. H. Towers (Cumberland) thinks that is the reason for the better nutrition now found by school medical officers among school-children, especially the younger ones. The task of seeing that children as they grow older are properly fed becomes increasingly difficult on account of the widening of responsibility. But the school medical service cannot possibly stop at estimating the prevalence of malnutrition and leave it at that. Much has already been done by education authorities, and children who appear underfed at school are being given free meals in increasing numbers. In the West Riding, Dr. J. N. V. Potts reports that 136,442 free dinners were given in 1933, and in Kent 54,000 more free dinners were supplied that year than in the previous. Twenty-one schools in East Sussex had canteens supplying good hot meals; in Nottinghamshire the organisation is thorough and a school dining-room is being included in the plan of several new schools. Even more striking is the increasing provision of milk; in Northumberland 196,992 half pints of milk were supplied free or at a small cost. In Hampshire milk clubs grew from 15 to 140 in four years; in the West Riding the issues of milk, mostly free and usually in addition to the meals, reached a total of over 9 million in the year, of cod-liver oil over 2 million. In Northants Dr. J. M. Mackintosh makes the handling of the utensils a deliberate lesson in hygiene to the school-children. Like a beneficent Mr. Wackford Squeers he teaches the subject of milk by making the pupils get it ready and drink it. In the provision both of meals and of milk, the help of the teachers is indispensable, and although, as Dr. W. G. Booth (Holland) says, "a special section was inserted into the Education Act by which teachers could not be required to attend to the meals of school-children," in actual fact they do it as a labour of love.

It is however to the home that the knowledge of good feeding must penetrate, for many medical officers hold the view, and hold it strongly, that much so-called malnutrition is caused by wrong feeding there; indeed one West Riding doctor (Dr. Aileen McMahon) questions the utility of pouring milk and cod-liver oil into children who on account of bad home feeding are suffering from indigestion, and Dr. P. H. Deeny (Notts) says: "There is an urgent need of some form of instruction of parents in the needs of growing children, in how to spend their money to the best advantage and in how to prepare appetising well-balanced meals." It is a very difficult matter to improve the quality of the meals at home, but efforts at instruction and advice are being made. In Derbyshire, for instance, Dr. W. M. Ash with the help of the education department is arranging house-keeping classes for the mothers; in Northants and Norfolk lectures are being given by school medical officers at women's institutes and welfare centres; in Notts Dr. A. C. Tibbits reports an increasing desire on the part of parents for information on health questions. The lectures, he says, will always secure a large and keen audience. Dr. Ash, remembering how "The Pudding Lady" found that to cook a meal with limited facilities had far more value than any other form of instruction, sends his health visitors with a cookery teacher to the homes. He has noted the competence of housewives who have been in domestic service. Girls who are likely to become housewives and mothers should, he says, be taught how to draw up a family dietary and how to cook food with the facilities available at home—not the intricacies of calories and vitamins "which have been known to cause friction even among eminent dietitians." At some of the schools in Devon and elsewhere the dinners are cooked by the elder girls under the supervision of the head teacher. In other places the administrative difficulties in the way of this are held to be insuperable; but the exercise has such value that it should be tried in the face of almost any discouragement.

Faults in general hygiene accentuate the harm done by defective feeding. Dr. Tibbits says: "Overcrowding and consequent lack of ventilation, bad housing and unsatisfactory clothing and footgear, appeared to be mainly responsible for malnutrition in a small number of cases both in urban and in rural districts, were contributory causes in many cases, and were present in the great majority of cases where the food-supply was deficient." The health authority

plays a part but prevention lies in giving hygiene its proper place in the school curriculum; those who have experience in correcting papers on hygiene by training college students know how sound a knowledge they possess. One important cause of malnutrition is lack of sleep and rest; in the West Riding, Dr. Nora Allan says, "the conflict against insufficient sleep goes on." Another cause is debility after illness, and here the open-air schools play their part. They are more evident in urban areas but there is one in the West Riding where the only regret is that local medical practitioners are not suggesting the transference to it of their slowly convalescing patients. The subject of malnutrition is in fact, as one M.O.H. puts it, the central feature of child life, and he might have added that it is the evil against which nearly every activity of the school medical service is directed. If every area adopted the best method used by any of the others the attack on a wide front would bring about a great victory.

City and Medical School at Bristol

With the appointment of a full-time professor of medicine the ties between the local health authority and the medical school of the University of Bristol have been further strengthened. It will be remembered that in October, 1933, Sir Hilton Young, the Minister of Health, opened a new department at the University under Dr. R. H. Parry, the medical officer of health, as professor of preventive medicine. Prof. Walker Hall relinquished his chair of pathology to become the first director of this department of preventive medicine, which has since been divided into three sections: bacteriology, clinical pathology, and chemistry—the last named under the direction of the public analyst. For part of the stipend of the new full-time chair of medicine, to which Dr. C. Bruce Perry has been appointed, the health and education committees of the city council are now responsible. Prof. Bruce Perry becomes physician to the municipal hospital and consulting physician to the city council; he remains responsible for the municipal cardiac clinic, as he has been since the death of Dr. Carey Coombs.

The municipal hospital at Southmead, which contains nearly 500 beds, has made rapid progress in its development as a general hospital since it was appropriated in April, 1930. Prof. Drew Smythe, who recently succeeded Dr. R. S. Statham in the chair of obstetrics, now takes over from him charge of the maternity department; last year the number of cases admitted to lying-in wards exceeded 800 as compared with about 150 in the years 1927–28. This department is recognised by the University for part of the training in this subject for the medical degree. The orthopædic department, established in 1931 under Prof. Hey Groves and Mr. H. Chitty with Mr. Kenneth Pridie as assistant surgeon, is responsible for all the orthopædic treatment carried out for the city council. Mr. G. R. Girdlestone is consulting surgeon to this department. In an operating block recently erected, accommodation and equipment were supplied for orthopædic as well as general surgery. Rooms were also provided for electrical treatment and remedial exercises.

These are rapid developments in making a great municipal hospital available to a University medical school for research and teaching.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED DEC. 29TH, 1934

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 2713; diphtheria, 1715; enteric fever, 14; acute pneumonia (primary or influenzal), 751; puerperal fever, 29; puerperal pyrexia, 77; cerebro-spinal fever, 12; acute poliomyelitis, 5; acute polio-encephalitis, 1; encephalitis lethargica, 5; dysentery, 7; ophthalmia neonatorum, 57. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Jan. 7th–8th was as follows: Small-pox, 0 under treatment, 0 under observation; scarlet fever, 1486; diphtheria, 2314; measles, 173; whooping-cough, 290; puerperal fever, 19 mothers (plus 8 babies); encephalitis lethargica, 267; poliomyelitis, 8; "other diseases," 287. At St. Margaret's Hospital there were 19 babies (plus 12 mothers) with ophthalmia neonatorum.

Deaths.—In 121 great towns, including London there was no death from small-pox, 1 (0) from enteric fever, 2 (0) from measles, 6 (1) from scarlet fever, 13 (5) from whooping-cough, 67 (6) from diphtheria, 40 (16) from diarrhœa and enteritis under two years, and 43 (11) from influenza. The figures in parentheses are those for London itself.

Gateshead reported the only fatal case of enteric fever. There were 4 deaths from diphtheria at Liverpool, Salford, Birmingham, and Merthyr Tydfil, 3 at Sheffield and Worcester, 2 each at Willesden, Luton, Bradford, Bury, Manchester, Newcastle-upon-Tyne, Oldham, Wakefield, Coventry, and Norwich.

The number of stillbirths notified during the week was 231 (corresponding to a rate of 54 per 1000 total births), including 36 in London.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

THE following Surg. Comdrs. are promoted to the rank of Surg. Capts.: H. St. C. Colson, E. St. G. S. Goodwin, G. D. G. Fergusson, A. E. Malone, and W. J. Carr.

Surg. Lt. R. F. Stenhouse to *Wellington*.

Surg. Lts. (D) R. S. Jenkins (act.) to *Drake* for R.N.B.; W. J. Wolton (act.) to *Drake* for R.N.B.; and A. W. Y. Price to *Pembroke* for R.N.B.

F. L. Ferris, K. E. J. Fletcher, and A. C. Horne entered as Act. Surg. Lts. (D), and apptd. to *Victory* for instruction at Haslar Hospital.

ROYAL NAVAL VOLUNTEER RESERVE

The following promotions are made: Surg. Lt.-Comdr. to Surg. Comdrs., W. H. Butcher and H. E. Hall.

Proby. Surg. Lt. D. Simpson to be Surg. Lt.

C. P. Nicholas entered as Proby. Surg. Sub-Lt. and attached to list 2 of the Severn Div.

ARMY MEDICAL SERVICES

Col. D. Ahern, D.S.O., half pay list, late R.A.M.C., having attained the age for retirement, is placed on ret. pay.

ROYAL ARMY MEDICAL CORPS

Maj. H. N. Stafford, M.C., retires on ret. pay.

Lt. P. H. Peacock to be Capt.

To be Bt. Cols.: Lt.-Col. R. M. Dickson, O.B.E., M.D., R.A.M.C., and Surg.-Lt.-Col. E. D. Anderson, M.B., R.H.G.

To be Bt. Lt.-Cols.: Maj. W. K. Morrison, D.S.O., M.B., R.A.M.C., and Maj. E. A. P. Brock, R.A.M.C.

REGULAR ARMY RESERVE OF OFFICERS

Lt.-Col. R. C. Hallowes, D.S.O., and Lt.-Col. T. E. Harty, D.S.O., having attained the age limit of liability to recall, cease to belong to the Res. of Off.

ROYAL AIR FORCE

The following promotions are announced:—Wing Commanders to be Group Captains: H. A. Hewat, R. H. Knowles, A. Grant, and T. J. Kelly.

Squadron Leaders to be Wing Commanders: D. G. Boddie, T. J. Thomas, W. F. Wilson, D. McLaren, W. E. Hodgins, A. E. Barr-Sim, F. J. Murphy, P. A. Hall, and T. McClurkin.

INDIAN MEDICAL SERVICE

To be Bt. Cols.: Lt.-Col. W. H. Hamilton, C.I.E., C.B.E., D.S.O., F.R.C.S., and Lt.-Col. F. F. Smith, M.D.

Indian Medical Department.—Sub. Maj. Rai Sahib Ram-ditta Mal is granted the hon. rank of Lt.

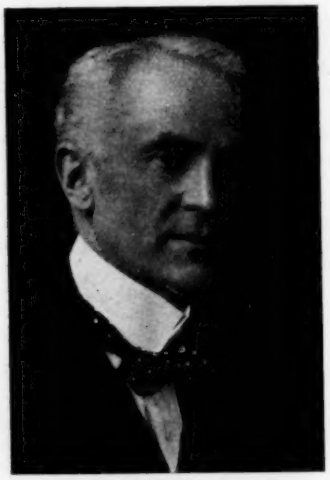
OBITUARY

SIR MAURICE CRAIG, C.B.E., M.D. Camb., F.R.C.P. Lond.

CONSULTING PHYSICIAN IN PSYCHOLOGICAL MEDICINE TO GUY'S HOSPITAL

Sir Maurice Craig, who died on Sunday last at East Preston, after a long period of ill-health, was born in 1866, the eldest son of Dr. William Simpson Craig and Frances Margaret Morrison. Dr. William Craig was the proprietor of and physician to a home for mental patients at Bedford.

Maurice Craig was educated at Bedford School and went to Gonville and Caius College, Cambridge, as a scholar in natural science; he graduated with first-class honours in the Natural Science Tripos of 1887, finding time also to be a prominent oar. He proceeded for his clinical studies to Guy's Hospital, and qualified with the English double diploma in 1891. He took the degrees of M.B., B.Chir. Camb. in the following year became M.R.C.P. London in 1897, and proceeded to the M.D. Camb. in 1898. He early decided on the specialty which he would follow and became clinical assistant to the Bethlem Royal Hospital shortly after qualification, when he made a good start by obtaining the Gaskell Gold Medal in psychology and psychological medicine awarded by the Royal Medico-Psychological Association. After a year at Bethlem, he served under Dr. Bevan Lewis for two years at the Wakefield Mental Hospital, when he returned to Bethlem as second assistant medical officer and became senior assistant in 1898. This post he held for ten years, when he resigned to engage in consulting practice. He had been elected to the staff of Guy's Hospital as lecturer in psychological medicine, later became physician, and at the time of his death was consulting physician in psychological medicine.



SIR MAURICE CRAIG
[Photograph by Elliott & Fry

Craig won a high position both among his colleagues and the public at an early age, showing himself from the beginning to be an unusual blend of scientific and worldly wisdom. His clinical work at the hospital, his consulting practice, his writings, and his public deliveries, all bore the stamp of wide and accurate reading directed to practical purposes, and these qualities were well shown when, at the outbreak of war, with the rank of lieut.-colonel, he became a neurological adviser to the R.A.M.C. There was now a large field in which to display his knowledge, tact, and humanity, and he won high opinions from soldiers, administrators, and colleagues alike for the way he shouldered his responsibilities. The case of the shell-shocked presented grave problems from the start; these became more difficult in the period which followed the war than they were during the actual struggle. Craig was a member of the War Office Committee on Shell-shock, and became consulting neurologist to the Ministry of Pensions and physician to the special hospital for officers founded by Lord Knutsford. At these institutions, as well as in the course of his military duties and the conduct of a large private practice, he worked assiduously at the diagnosis and treatment of the many obscure and involved conditions that lay behind the symptoms and complaints of a great range of suffering.

Craig now published his book, "A Manual of Mental Diseases for Practitioners and Students," which was a real advance on anything in English at the time. The book has passed through several editions, and in the last, published in 1926, he had the coöperation of Dr. Thomas Beaton. The text-book has been a standard one for many years; written in a clear and simple fashion it has formed the introduction to psychiatry for many doctors now in practice. The presentation remained somewhat formal and reflected the time of its first writing, when there was a stronger physical bias towards the ætiology of mental disease, but it is an excellent book. He followed this with a small book entitled "Nerve Exhaustion," where he came out as the champion of the nosological reality of the condition, despite the scepticism as to the existence of such an entity which followed in one direction upon Freud's work and in another upon the developments of endocrinology. He did not defend the indiscriminate use of the word "neurasthenia," but submitted useful and practical directions for treatment based on his experience, affirming that theories, definitions, and discussions could not alter the fact that many persons not only complained of but definitely suffered from a physical and mental state he would term "nerve exhaustion" and which yielded to intelligent treatment. He was always in writing and teaching especially impressed by the importance of insomnia in the production of mental disease, and he felt that the combating of this symptom was of the greatest importance in the care and treatment of the nervous patient.

Craig's orderly wisdom, clear head, genuine sympathy with his patients, and not a little his charming manner conduced to make his opinion widely sought, the Home Office and members of the profession alike asking his counsel in cases where the detection of the psychological position would determine the course of action. He had, and never hid them, strong personal views, but was receptive of those of others, as shown in the Maudsley lecture of 1922 which was delivered at the annual meeting of the Royal Medico-Psychological Association. Craig here attempted the difficult demonstration of how the problems of insanity could be best solved by the close collaboration of physician, psychologist, and educationist. Dealing with childhood he pointed to the frequency with which insanity resulted from exhaustion and emotional stress, indicating the directions in which watch should be kept by the family physician and the schoolmaster against the dangers of over-stimulation. He was critical of the emphasis laid by Freud on the sexual characters of many complexes, while allowing the great service to science which had resulted from the attention, directed by Freud and his followers, to the damage wrought on the mind by mental conflicts and their subsequent repression. Later in the same year he delivered the Bradshaw lecture before the Royal College of Physicians of London, taking for his subject mental symptoms in physical

disease. Pointing to the general recognition, increasingly emphasised, of the close relationship of the various systems of the body, he saw the need of the clinical physician to work in close relationship with the pure scientist, but saw also the dangers of specialism. In a pithy sentence he summarised these dangers. "The physician," he said, "whose attitude of mind leads him to prefer psychical to physical ætiology, should beware of overlooking a collection of pus in his preoccupied concern with the patient's mental confusion and hallucinations. Delighted as he may legitimately be in tracing an anxiety neurosis to a forgotten incident of childhood, in replacing a maladaption to the facts of life by a wiser and saner mental outlook, hours of misplaced psycho-analytic enthusiasm may be saved by a urinary test or a glance at the optic discs."

Craig was a prominent success in private practice and insistent on the importance of intimate relations with the family doctor. He used to say that having worked for many years within the walls of a mental hospital he was devoting the rest of his life to keeping people from becoming candidates for those institutions. In other words he felt increasingly that the preventive aspect of mental disorder was the main one, and it was no doubt this that led him to be the principal agent in forming the National Council for Mental Hygiene. He was a whole-hearted supporter of all forms of research into the ætiology of mental disorders and developed strong views on the importance, first, of the dissemination of knowledge about nervous and mental disease to the public and, secondly, of strengthening the medical curriculum so that the teaching of the early manifestations of such disease should be presented to the students. He believed that the day would come when people suffering from mental disease would be regarded in the same light as those suffering from physical disorder and be treated from a similar outlook. His impatience with certain modern psychological work, and the great significance which he attached to the physical health of mental patients, made him sometimes appear to be an apostle of the old maxim "the healthy mind in the healthy body," but his views were founded on a range of experience which entitled him to hold them. Few people could have had a more intuitive knowledge than he of the personal factors which are involved in mental illness, and he owed his marked success to his faculty for reading character, his care in interpreting evidence, and his gift of handling people. No note on his services to psychological medicine would be adequate without reference to his qualities as a man. There must have been few with whom he came into contact who did not feel the kindliness and loyalty of his nature, as there were few, colleagues, patients, or friends, who were not influenced by a charming personality.

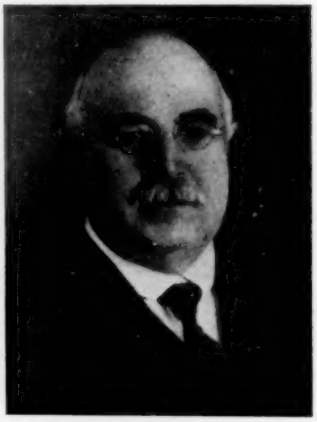
The list of public positions which Craig was invited to fill was, as might be expected, very large. His abiding interest in his old school was testified to by the chairmanship of the Harpur Trust. He was governor of the Royal Hospitals of Bethlem and Bridewell, and chairman of the medical committee of the Cassel Hospital for Functional Nervous Disorders. He had been chairman of the Mental After-Care Association, president of the psychiatry section of the Royal Society of Medicine, and chairman of the National Council for Mental Hygiene, and was a vice-president of the International Committee. He was an examiner at Cambridge for the diploma in psychological medicine, and presided over the section of mental disorder at the centenary meeting of the British Medical Association, nor does this exhaust the list of his public duties.

Sir Maurice Craig was appointed C.B.E. in 1918, and was knighted in 1921. He married in 1903, Edith de Saumarez, daughter of Mr. A. Kentish Brock, and leaves one son and two daughters.

WALTER STACY COLMAN, M.D., F.R.C.P. Lond.

CONSULTING PHYSICIAN, HOSPITAL FOR SICK CHILDREN, GREAT ORMOND-STREET

Walter Stacy Colman, who died on the last day of the Old Year, was born in 1864 and was the fourth son of Samuel Crackanthorp Colman and Lucy Maria Colman, née Stacy, both old and well-known Norfolk families. He was educated at Bishops Stortford College, which at that time was known as the Nonconformist Grammar School, and commenced his medical training in a manner which was already becomnig old fashioned but which in his case certainly stood him in good stead, for he worked at Peterborough Infirmary under the late Dr. T. J. Walker, who was an exceptionally endowed practitioner. In 1882 Colman proceeded to Edinburgh for his regular clinical training. He had a successful career as a student, both there and at University College, London. He qualified in 1886 as M.R.C.S. Eng., graduated as M.B. Lond. in 1887, obtained the Murchison Scholarship in clinical medicine, and proceeded to the M.D. Lond. in 1892. He was elected F.R.C.P. in 1897.



DR. COLMAN

He held certain resident posts in London and made his mark as quite a young man by his contributions to debates at the Medical and Chirurgical Society and the Medical Society of London, and he wrote a practical little book on section cutting and staining. His merits were promptly recognised by election to the honorary staffs in succession of the Hospital for Sick Children, Great Ormond-street, the National Hospital for Paralysis, Queen-square, and finally St. Thomas's Hospital. At Great Ormond-street he was elected medical registrar and pathologist before becoming assistant physician, while at Queen-square he was elected both as assistant physician and pathologist, being the first to hold the latter appointment. At St. Thomas's Hospital he was assistant physician in charge of the children's department and lecturer on forensic medicine. At this period he joined the staff of THE LANCET and for many years we relied on his advice and editorial writing in connexion with both neurology and pædiatrics. It followed upon his unusual opportunities for clinical observation that he should be a regular contributor to medical journals and be associated with the production of medical systems and treatises. For Allbutt and Rolleston's "System of Medicine" he wrote the article on defects of articulation, for Gibson's "Text-book of Medicine"

the sections on disseminated sclerosis and aphasia, and for Allchin's "Manual of Medicine" an essay on the functional diseases of the nervous system. In our own columns he wrote articles on epileptic automatism, treatment of stammering, and on infantile scurvy, while to the *Transactions of the Pathological Society* and the *St. Thomas's Hospital Reports* he also made contributions. All his writing was characterised by accuracy and the intention to dwell upon essentials.

In his hospital appointments Colman proved a success, for his learning grew very great and his assiduity in taking notes kept that learning always available, while patients appreciated his comprehension of their troubles and his real sympathy with them. At St. Thomas's Hospital his popularity was marked, while as a lecturer on forensic medicine he excelled, as the crowded attendance showed. "He had," writes one of his colleagues, "the happy knack of leavening instruction with amusement and there was nothing dull about his expositions."

Colman was always a delicate man—how delicate will be gathered from the tribute paid to him below by Sir Thomas Barlow—and when the war broke out he was already working at a level which was quite unsafe in his physical condition. He had resigned his appointment at the National Hospital, Queen-square, on being appointed to St. Thomas's Hospital, but he still served actively at St. Thomas's and Great Ormond-street while the calls of his private practice were many. None the less, he served on the staff of the 2nd London General Hospital and went to France in 1917 with a unit from that hospital. He fell ill in camp, was invalided home, and in 1918 he retired from practice and went to live in Surrey, continuing only his life insurance work in London. He became a member of the Surrey county council in 1922 and took a very active part in county council affairs. He served on no fewer than 11 of its standing subcommittees, including the public health, the mental hospitals, the public assistance, and the general purposes committees. He was also a keen member of the small but very important special committee appointed to review the county districts under the Local Government Act, 1929. The transfer of the poor-law from the former boards of guardians to the county council brought about a vast accretion of work to the council, and Colman as the first chairman of the institutions subcommittee of the public assistance committee took an energetic part in the consequent reorganisation. In connexion with the mental hospitals committee he sponsored the scheme for the provision of a modern reception hospital at the Brookwood mental hospital, and he took a prominent and informed interest in the large extensions of the two county mental hospitals which were carried out in his time. With his sound judgment and his wide knowledge he was the type of man on whom, in a local authority, work inevitably and naturally falls; he was very much trusted and respected by his fellow members, and his resignation was felt as a great loss to the council and to the community. There is little doubt that it was his work, notably on the review of county districts committee and on the public assistance committee, which was directly responsible for the final breakdown in his health. He served both the county council and the public with great distinction, and even after resigning his seat on the council in 1931, he still kept in general touch with its activities, and was coöpted a member of its records and ancient monuments committee.

Outside his purely professional life Colman had many interests. He was a scholar, an archæologist, and a linguist, while he was also a keen freemason. Dr. C. R. Box writes: "Walter Colman entered with enthusiasm into the proposal for the foundation of a Masonic Lodge at St. Thomas's Hospital, and as one of the founders spared no effort to further the project. Thus when the Cheselden lodge was consecrated and Thomas Wakley junr., then editor of THE LANCET, became the first master, Colman took office as senior deacon. He became master in 1903, being installed by his predecessor. At all the committee meetings, many of which were held at THE LANCET Office, he was a regular attendant. At the St. Luke's medical lodge of instruction he was also a well-known figure and was the representative of the Cheselden lodge on the managing committee. When the Cheselden chapter was formed, in connexion with the hospital lodge, Colman was among the first to join and passed through the principal chairs. He continued his close association with hospital masonry until he left London."

Walter Colman was married in 1898 to Dorothea, daughter of William Sproston Caine, the Liberal M.P., who for the 20 concluding years of the last century was an active leader in temperance reform and an authority on our relations with India. Mrs. Colman was a physician but retired from practice on marriage. She survives her husband, with two sons, the Rev. James Rushton Colman, at present working in the South African Railway Mission, and Prof. John Stacy Colman, professor of biology at the Memorial College, St. Johns, Newfoundland.

The following tributes to Colman's memory have been received from Sir Thomas Barlow and Dr. James Taylor. They will be read with pleasure by his numerous friends, among whom his early and unavoidable retirement from practice had never ceased to be regretted.

Sir Thomas Barlow writes: "The death of Dr. Walter Colman will bring a keen sense of loss to his friends who knew and valued his great gifts as a physician as well as to those who had worked with him in much county administration or in life assurance. Colman's early medical education was at Edinburgh. He graduated in medicine at the university there, but his later medical education was at University College Hospital, and he was also a medical graduate of London University. My friendship with him dated from the time when he came to London. His post-graduate work was chiefly at Great Ormond-street and Queen-square. He became medical registrar and pathologist and ultimately assistant physician at both these hospitals and reached his culminating position when he was elected assistant physician at St. Thomas's. During this rather lengthened period of clinical study he had gained a very varied and well-ordered experience, and his friends anticipated that he would take a high position in medicine. There came, however, a great blow which dogged the whole of his after life, though its gravity was at first scarcely realised. He got a severe attack of parotitis attended with decided septicæmia and albuminuria, and although this last condition varied it never subsided, and in the course of years eventuated in obstinate renal disease. This led ultimately to the resignation of his hospital appointments and to a great limitation of his activities. His wonderful elasticity and courage enabled him however to make a good fight and he was fortunate in getting a valuable insurance appointment. After the war, in connexion with which he did valuable service in France, he gave up his London house and went to live at Farnham, and there he was persuaded

to help in arduous voluntary work, especially on county asylum administration, while he also kept on his insurance work in London.

"Colman's unbounded energy and versatility, his accurate notetaking, his varied experience (for he had made good use of sundry foreign visits) gave him a large store of available knowledge. He had great resource in medical and other emergencies; his cheerful outlook was also an asset and he was remarkably happy and useful in drawing up programmes as to mode of life, travel, and other occupations. His own patience during the often grave interferences with his work was astonishing.

"He had a most happy family life. His wife, a medical graduate of London University, was a wonderful comrade and he had two sons, one now a clergyman in S. Africa and the other a lecturer in biology at St. Johns, Newfoundland. He made many sacrifices for the sake of their education and was rewarded by their success and devotion.

He had many interests outside medicine; he had travelled widely, was a keen concert-goer, a great reader, and a generous lender of books; had made some translations from the Russian, and after he went to Surrey, spent part of his leisure in helping with some local excavations. His unselfishness, forethought, and wise judgment were beyond praise and endeared him to all who knew him. "Nature he loved, and after nature art; he warmed both hands before the fire of life."

Dr. James Taylor writes: "As a friend of Walter Colman who had known him intimately for nearly 50 years, I should like to add a few personal remarks to his biography. No one who knew him as I did could help being impressed with the many phases of his remarkable personality. He had the misfortune to be handicapped for long years by indifferent health; on two occasions in his early professional life this necessitated the relinquishment of appointments very valuable at the stage he had reached in his professional career. He was undismayed, and when he was able to resume work his character and his abilities opened fresh doors. His early interest was pathology and his little book on the histological examination of nervous tissues was most useful at the time it appeared.

"Also it was not only professionally that Walter Colman was remarkable for his wide knowledge and sympathetic understanding. He had a keen interest in literature and science and was one of the most widely read men I have known. He had a mind of wonderful acuteness and an extraordinary memory, and his rapidity in reading and working was remarkable. He also was blessed with the keenest sense of humour, and had a great faculty of conveying in a few words—often illuminated with humorous and witty touches—the essential substance of much reading. He was a friend who was very staunch in his loyalty and was quite free from jealousy and pettiness of any description. The misfortunes of his bad health he bore with the patience and equanimity which were characteristic of the man and those who knew him best will most deeply sympathise with those he has left behind."

MARY MARGARET O'LEARY, M.B. N.U.I.

GREAT regret is felt in Dublin at the death of Dr. Mary O'Leary, assistant medical officer of health for the city, in tragic circumstances. She graduated at the National University of Ireland in 1915, and was engaged in public health work almost continuously ever since. She studied at several centres abroad, and was for some years engaged in maternity and child welfare work in Manchester, under the corporation. Seven years ago she returned to Dublin and was appointed by the Dublin Corporation as medical inspector of school-children, with the status of assistant medical officer of health of the city. There had been no medical inspection of school-children previously in Dublin, and it fell to her to organise a system. This she did with great success, and it was largely due to her personality that the warm coöperation of the school managers, the teachers, and the parents was won. With her colleagues of the medical profession her relations were most cordial, and her contributions dealing with problems arising from her work, when made to the Royal Academy of Medicine in Ireland, exhibited an intimate knowledge of the details of school inspection and also a wide outlook on public health. Over-work recently forced her to apply for six months' leave, and she left home just before Christmas for a cruise in the Mediterranean. On the morning of Dec. 31st, 1934, she was found to be missing from the ship. Her early death is a heavy loss to public health work in Dublin.

BASIL LAVER, M.S. Lond. F.R.C.S. Eng.

THE death occurred on Dec. 28th of Mr. Basil Laver at the age of 40, who had practised for the last eight or nine years in Northampton. He was a very able young surgeon, as his record at Guy's Hospital shows, and the notice of his early death has been received with wide regret. He was born in the Transvaal and educated at the Bedford Modern School, entering Guy's Hospital just before the outbreak of war. He broke off his medical studies and served in the R.F.A. with distinction, becoming adjutant and attaining the rank of major. Returning to Guy's he took the English double qualification in 1922 and graduated as M.B., B.S. Lond. in the following year. In 1925 he obtained the F.R.C.S. Eng. and proceeded to the degree of M.S. Lond. in the following year. He held resident appointments at Guy's Hospital, obtained the Arthur Durham travelling studentship, and became surgical registrar and tutor at the hospital. He took up surgical practice in Northampton and was elected surgeon to the Northampton General Hospital; he was also consulting surgeon to the Stamford, Rutland and General Infirmary. Mr. Laver was a fine exponent of modern surgery, his independence of judgment and skill in practice being widely recognised by his colleagues and a large public.

HARRY SPURRIER, M.B. Camb.

Dr. Harry Spurrier died on Dec. 8th, 1934, aged 59, at the Hospital of the National Sanatorium Association, Benenden. He had been for some years medical superintendent of the sanatorium. He had previously practised at Maidenhead and had been surgeon to the Maidenhead Cottage Hospital and Surgeon to the King Edward Hospital, Windsor, after holding the appointment of assistant medical officer at the Brompton Sanatorium at Frimley. He realised some fifteen years ago that he was himself a tuberculous subject, but he continued to work for the relief of other sufferers in a way which he certainly would not have allowed others to do, and in the event the disease claimed him, the latter portion of his life forming a fine example of courage. He leaves a widow and three sons.

MEDICAL NEWS

Royal College of Surgeons of England

Forthcoming lectures.—The following lectures will be given on Mondays, Wednesdays, and Fridays from Jan. 14th to Feb. 8th: Jan. 14th, Mr. Harold Burrows, some observations on sex hormones in relationship to pathological lesions of the mamma; Jan. 16th, Mr. W. Rowley Bristow, on internal derangement of the knee-joint; Jan. 18th, Mr. Lambert Rogers, on the surgery of spinal tumours; Jan. 21st, Mr. T. Pomfret Kilner, on the transplantation of skin; Jan. 23rd, Mr. Laurence O'Shaughnessy, on the surgery of the lung root; Jan. 25th, Dr. Macdonald Critchley, on the morphology of the cerebro-spinal arteries and their clinical significance; Jan. 28th, Mr. B. W. Rycroft, on recent investigations in the ætiology and treatment of glaucoma; Jan. 30th, Mr. G. C. Knight, on the innervation of the œsophagus in relation to the surgical treatment of achalasia of the cardia; Feb. 1st, Mr. C. Bowdler Henry, on the ætiology and treatment of misplaced third molars; Feb. 4th, Mr. H. J. Seddon, on the morbid anatomy of caries of the thoracic spine in relation to treatment; Feb. 6th, Dr. J. F. Brailsford, on dystrophies of the skeleton; Feb. 8th, Mr. C. Max Page, on the late results of the operative treatment of osteo-arthritis. On Feb. 11th, 13th, and 15th Dr. John Beattie will give three lectures on the anatomy and physiology of the hypothalamus. All the lectures will be given at the College at 5 P.M.

University of London

At recent examinations the following candidates were successful:—

M.S.

Branch I. (*Surgery*).—E. A. Devenish, Univ. Coll. Hosp.; and A. L. Eyre-Brook, Univ. of Bristol.

Branch III. (*Ophthalmology*).—L. H. Savin (University medal), King's Coll. and Westminster Hosp.

M.D.

Branch I. (*Medicine*).—Cécile H. D. Asher, Roy. Free Hosp.; Julia C. H. Avery, C. G. Barnes (university medal), and A. C. Byles, St. Mary's Hosp.; A. M. Gill, Middlesex Hosp.; D. V. Hubble, St. Bart.'s Hosp.; E. B. Jackson, Univ. Coll. Hosp.; Robert Knox, St. Bart.'s Hosp.; H. G. McGregor, Guy's Hosp.; R. T. Payne and E. F. Scowen, St. Bart.'s Hosp.; W. R. C. Spicer, Guy's Hosp.; Bertha Turner, Roy. Free Hosp.; and Albertine L. Winner, Univ. Coll. Hosp.

Branch II. (*Pathology*).—Rosa O. J. Clark, Roy. Free Hosp.; and S. J. M. De Navasquez, Guy's Hosp.

Branch III. (*Psychological Medicine*).—David Shaw, St. Bart.'s Hosp.

Branch IV. (*Midwifery and Diseases of Women*).—Barton Gilbert and W. P. Hedgcock, St. Thomas's Hosp.; Esther M. Martin and Mary H. Mayeur, Roy. Free Hosp.

Branch V. (*Hygiene*).—F. R. Dennison, King's Coll. Hosp.; Llywelyn Roberts, Middlesex Hosp. and London School of Hygiene and Trop. Med.; and S. L. Wright, Univ. Coll. Hosp. and London School of Hygiene and Trop. Med.

Queen's University, Belfast

On Dec. 21st the following degrees were conferred:—

M.D.—Edward Davison (with commendation), and J. M. Gray.

M.B., B.Ch., B.A.O.—Adelaide E. Anderson, Sheila W. Black, R. B. Boal, R. C. Brien, B. N. Eedy, H. F. L. Gallaher, E. T. Goldblatt, Samuel Graham, G. E. Gray, Mary E. Hegarty, H. R. D. Ireland, J. R. McWhirter, G. A. Scott, and G. T. Thompson.

Society for Relief of Widows and Orphans of Medical Men

At a quarterly court held on Jan. 2nd, Mr. V. Warren Low, the president, being in the chair, a sum of £1945 was voted for half-yearly grants to 53 widows and eight orphans. A further sum of £660 had been distributed as a Christmas present, widows over 75 receiving £15, widows under 75, and orphans £10 each. The deaths of two widows were reported. One whose husband joined the society in 1875 and died in 1920, received in grants £1210; the other received £955—her husband became a member in 1901 and died in 1923. Under the constitution of this society relief is only granted to the necessitous widows and orphans of deceased members, and the directors are anxious to bring to the notice of newly qualified men or to those recently married the great advantages of membership. Full particulars from the secretary at the offices of the society, 11, Chandos-street, London, W.1.

British Institute of Philosophy

An address will be given by Sir Herbert Samuel entitled Philosophy, Religion, and Present World Conditions at University College, Gower-street, London, W.C., on Tuesday, Jan. 22nd, at 8.15 P.M. Application for tickets should be made to the director of studies at University Hall, 14, Gordon-square, W.C. 1.

A Demonstration of Abnormalities

The Kensington division of the British Medical Association will hold a clinical meeting on Friday, Jan. 18th, at the Princess Beatrice Hospital, Richmond-road, S.W., at 8.45 P.M. By arrangement with the medical staff of the hospital and by permission of Mr. Bertram Mills there will be a demonstration of "human oddities and freaks" appearing at the Olympia Circus. Members of the medical profession are invited.

Post-graduate Work in Newcastle

Under the auspices of the University of Durham classes will meet at the Babies' Hospital and Royal Victoria Infirmary, Newcastle, on Wednesday and Thursday afternoons from Jan. 17th to March 27th. They will deal with diseases of children, neurology, and ophthalmology. Till March 24th there will be lecture demonstrations in medicine and surgery every Sunday at 10.30 A.M. Further particulars may be had from the registrar, College of Medicine, Newcastle-upon-Tyne.

Wigan Infirmary

The offer of Mr. George Christopher of the sum of £35,000 to erect a self-contained block for paying patients at the infirmary has been accepted, and work will begin shortly.

Old Surrey Theatre

The old Surrey Theatre in Blackfriars-road has been purchased on behalf of the Royal Eye Hospital. The intention is to erect one big building on the existing premises and on the ground covered by the theatre. In order to buy the site, the hospital has had to obtain an overdraft of £8500 and deposit a large portion of its securities.

Liverpool Psychiatric Clinic

A course of four lectures on present-day methods of treatment will be held at the clinic on Thursdays, at 5 P.M., during February. On Feb. 7th Miss M. W. Ferrie, honorary speech therapist at the Royal Liverpool Children's Hospital, will open the course with a lecture on speech therapy. On Feb. 14th Dr. Anne Gillespie, deputy medical superintendent of the county Mental Hospital, Chester, is to consider occupational therapy; while on Feb. 21st Dr. Margaret Lowenfeld, director of the National Institute of Child Psychology, will speak on play therapy. On Feb. 28th Dr. J. Ernest Nicole, senior assistant medical officer at the Lancashire County Mental Hospital, Winwick, will give the last lecture, when his subject will be psychotherapy. Further information may be had from the lecture secretary at the clinic, 56, Bedford-street North, Liverpool, 7.

Fellowship of Medicine and Post-Graduate Medical Association

Surgical tutorial classes will be held at the National Temperance Hospital on Tuesdays and Thursdays at 8 P.M., and the subjects chosen are: Mr. Rocyn-Jones, chronic diseases of bones (Jan. 15th); Mr. A. J. Cokkinis, diseases of the joints (Jan. 17th); Mr. R. C. Brock, injuries to bones (Jan. 22nd); and Mr. T. Holmes Sellors, thorax (Jan. 24th). Talkie films on rehabilitation methods of treatment and training of the physically handicapped will be shown by Dr. H. H. Kessler (Newark, New Jersey) at the Western Electric Company's Theatre, Bush House, Aldwych, W.C., at 8.30 P.M. on Thursday, Jan. 31st, and all members of the medical profession and their friends will be welcome. The other courses are open only to members and associates of the fellowship. The secretary of the fellowship may be addressed at 1, Wimpole-street, W.

Medical Diary

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
TUESDAY, Jan. 15th.
General Meeting of Fellows. 5.30 P.M.
Pathology. 8 P.M. for 8.30 P.M. Laboratory Meeting at the Royal Army Medical College, Millbank, S.W.
Orthopædics. 8.30 P.M. Dr. H. H. Kessler: "Some Problems of Industrial Orthopædic Surgery," with special reference to the restoration of injured workpeople to their former working and earning capacity. Members of the Sections of Physical Medicine and Surgery invited.
THURSDAY.
Dermatology. 5 P.M. (Cases at 4 P.M.) Cases: Dr. F. Parkes Weber: 1. Darwinic Blotchy Flushing over Neck and Upper Thorax. Dr. Louis Forman: 2. Case for Diagnosis. Other cases will be shown.
Neurology and Psychiatry. 8.30 P.M. Dr. R. Mackenzie Stewart, Dr. Noel Burke, Prof. R. J. A. Berry, and Dr. C. J. C. Earl: Mental Defects from the Neurological and Psychiatric Standpoints.
FRIDAY.
Physical Medicine and Dermatology. 5 P.M. Dr. Albert Eidinow: Photo-dynamic Sensitisation, Biological Action, and Therapeutic Application.
Obstetrics and Gynæcology. 8 P.M. Mr. Cecil J. B. Voge: The pH of the Vagina and its Relation to Fertility and Sterility. Dr. L. N. Reece: The Estimation of Fœtal Maturity by X Ray Cephalometry. Members of the Section of Radiology invited.
Radiology. 8.15 P.M. Dr. A. T. Todd, Dr. Gilbert Scott, and Dr. A. F. Harriott Coke: The Prevention and Treatment of Metastasis in Carcinoma Mammæ. Dr. J. M. Woodburn Morison, Dr. N. S. Finzi, Dr. J. H. Douglas Webster, and Dr. J. E. A. Lynham will also speak.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.
MONDAY, Jan. 14th.—8 P.M., Pathological Evening.

ROYAL MICROSCOPICAL SOCIETY, B.M.A. House, Tavistock-square, W.C.
WEDNESDAY, Jan. 16th.—5.30 P.M., Prof. W. A. Balfour-Browne: Species Characters. (Presidential address.)

CHELSEA CLINICAL SOCIETY.
TUESDAY, Jan. 15th.—8.30 P.M. (Hotel Rembrandt Hostel, Thurloe-place, S.W.), Mr. W. Oliver Nodes: Embalming.

LONDON JEWISH HOSPITAL MEDICAL SOCIETY, Stepney Green, E.
THURSDAY, Jan. 17th.—3.45 P.M., Sir William Willcox, Dr. E. Stolkind, Dr. C. Worster-Drought, and Prof. E. Fraenkel: Focal Sepsis.

EUGENICS SOCIETY.
TUESDAY, Jan. 15th.—5.15 P.M. (Rooms of the Linnean Society, Burlington House, Piccadilly, W.), Mr. J. A. Fraser Roberts: Twins.

HUNTERIAN SOCIETY.
MONDAY, Jan. 14th.—9 P.M. (Mansion House, E.C.) Dr. H. H. Kessler: Rehabilitation Surgery.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, Manson House, 26, Portland-place, W.
THURSDAY, Jan. 17th.—8.15 P.M., Prof. Warrington Yorke and Dr. F. Murgatroyd: Biological Problems in Chemotherapy.

BIOCHEMICAL SOCIETY.
FRIDAY, Jan. 18th.—4.30 P.M. (Lister Institute, Chelsea Bridge-road, S.W.), Short Communications.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn-fields, W.C. (Hunterian lectures.)
MONDAY, Jan. 14th.—5 P.M., Mr. Harold Burrows: Some Observations on Sex Hormones in Relationship to Pathological Lesions of the Mamma.
WEDNESDAY.—5 P.M., Mr. W. Rowley Bristow: Internal Derangement of the Knee-joint.
FRIDAY.—5 P.M., Mr. Lambert Rogers: Surgery of Spinal Tumours.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, Jan. 14th, to SUNDAY, Jan. 20th.—NATIONAL HEART HOSPITAL, Westmorland-street, W. All day course in cardiology (open to all).—MEDICAL SOCIETY OF LONDON, Chandos-street, W., Frid., 4.15 P.M., Dr. Clark-Kennedy: Organic Dyspepsia.—NATIONAL TEMPERANCE HOSPITAL, Hampstead-road, N.W. Tues., 8 P.M., Mr. A. Rocyn-Jones: Chronic Diseases of Bones. Thurs., 8 P.M., Mr. A. J. Cokkinis: Diseases of the Joints.—WEST END HOSPITAL FOR NERVOUS DISEASES, Gloucester-gate, Regent's-park, N.W. Tues., 8.30 P.M., Mr. Lindsay Rea: Fundus Oculi.—WELLCOME MUSEUM OF MEDICAL SCIENCE, 183, Euston-road, N.W. Thurs., 3 P.M., Dr. C. M. Wenyon: Some New Aspects of Malaria.—ROYAL CHEST HOSPITAL, City-road, E.C. Sat. and Sund., course in diseases of the heart and lungs.—Courses, clinics, &c., are open only to members and associates of the Fellowship.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C.
FRIDAY, Jan. 18th.—4 P.M., Mr. N. Asherson: Acute Conditions simulating Otitis Media.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.
MONDAY, Jan. 14th.—10 A.M., medical wards, skin clinic. 2 P.M., surgical and gynæcological wards, eye and gynæcological clinics. 4.15 P.M., Mr. Green-Armytage: Prolapse.
TUESDAY.—10 A.M., medical wards. 11 A.M., surgical wards. 2 P.M., throat clinic. 4.15 P.M., Dr. Konstam: Cardiac Arrhythmias.
WEDNESDAY.—10 A.M., children's ward and clinic. 2 P.M., medical wards, eye clinic.
THURSDAY.—10 A.M., neurological and gynæcological clinics. 11 A.M., fracture clinic. 2 P.M., eye and genito-urinary clinics.
FRIDAY.—10 A.M., skin clinic. Noon, lecture on treatment. 2 P.M., throat clinic. 4.15 P.M., Dr. Sydney Owen: Difficult and Delicate Infants.
SATURDAY.—10 A.M., medical wards, children's and surgical clinics.
The lectures at 4.15 P.M. are open to all medical practitioners without fee.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
MONDAY, Jan. 14th.—Noon, Dr. W. W. Payne: Test of Renal Function.
WEDNESDAY.—2.30 P.M., Dr. R. S. Frew: Cough.
THURSDAY.—Noon, Dr. A. G. Signy: Immunisation in Diphtheria.
FRIDAY.—Noon, Mr. H. Tyrrell-Gray: Abdominal Pain.
There will be out-patient clinics every day at 10 A.M. and ward visits (except on Wednesdays) at 2 P.M.

TUBERCULOSIS ASSOCIATION.
FRIDAY, Jan. 18th.—5.15 P.M. (at 26, Portland-place, W.) Dr. P. F. Armand-Delille: Anatomical and Clinical Modes of Tuberculous Reinfection at Puberty. 8.15 P.M., Dr. J. W. S. Blacklock: Pathology and Bacteriology of Tuberculosis in Young Children. Dr. A. G. L. Reade: Development of Pulmonary Tuberculosis in Children.

CANCER HOSPITAL (FREE), Fulham-road, S.W.
THURSDAY, Jan. 17th.—4 P.M., Mr. Percival Cole: Relative Merits of Surgery and Radium in Malignant Disease of the Face and Buccal Cavity.

PRINCESS BEATRICE HOSPITAL, Richmond-road, S.W.
THURSDAY, Jan. 17th.—9 P.M., Dr. Stanley Wyard: Medical Aspects of Goitre.

ROYAL INSTITUTION, 21, Albemarle-street, W.
THURSDAY, Jan. 17th.—5.15 P.M., Prof. H. Hartridge: Recent Advances in Vision and Hearing.

LONDON SCHOOL OF DERMATOLOGY, 49, Leicester-square, W.C.
TUESDAY, Jan. 15th.—5 P.M., Dr. W. Griffith: Eczema.
WEDNESDAY.—5 P.M., Dr. I. Muende: Histopathology of some Common Skin Diseases.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.
THURSDAY, Jan. 17th.—9 P.M., Dr. Douglas Firth: Treatment of Chronic *B. coli* Infections.

BRITISH INSTITUTE OF RADIOLOGY, 32, Welbeck-street, W.
THURSDAY, Jan. 17th.—8 P.M., Mr. W. V. Mayneord and Mr. J. E. Roberts: Quality of High Voltage Radiations.
FRIDAY.—11 A.M., Visit to Elizabeth Garrett Anderson Hospital. 5 P.M., Films of Cases.

BRITISH RED CROSS CLINIC FOR RHEUMATISM, Peto-place, N.W.
THURSDAY, Jan. 17th.—8.30 P.M., Dr. W. S. C. Copeman: Modern Treatment of Rheumatoid Arthritis.

LEEDS GENERAL INFIRMARY.
TUESDAY, Jan. 15th.—3.30 P.M., Mr. Symons: Demonstration of Urological Cases.

LEEDS PUBLIC DISPENSARY AND HOSPITAL.
WEDNESDAY, Jan. 16th.—4 P.M., Dr. H. H. Moll: Lung Abscess.

GLASGOW POST-GRADUATE ASSOCIATION.
WEDNESDAY, Jan. 16th.—4.15 P.M. (Western Infirmary) Prof. T. K. Monro: Medical Cases.

Appointments

FOSTER, F. N., M.B. Leeds, F.R.C.S. Eng., has been appointed First Assistant to the Medical Superintendent of Oldchurch Hospital, Romford.

LEE, R. O., F.R.C.S. Eng., Hon. Assistant Surgeon to the Northampton General Hospital.

WILSON, E. F., F.R.C.S. Eng., Honorary Surgeon with charge of out-patients to the Prince of Wales Hospital, Plymouth.

West London Hospital.—The following appointments are announced:—
BRIGGS, C. F. R., M.B. Lond., House Physician;
RUNDLE, F. F., M.B. Sydney, House Surgeon;
BOWEN-DAVIES, ALAN, M.B. Camb., House Surgeon; and CODEN, BERNARD, M.B. Edin., Resident Anæsthetist.

Certifying Surgeons under the Factory and Workshop Acts: Dr. A. D. MORTON (Axminster, Devon); Dr. J. A. ADAMS (Kelvedon, Essex); Dr. C. L. POTTS (Redditch, Worcestershire), Dr. C. E. R. WOOD (Newbury, Berkshire).

Dr. A. E. Carver has decided not to take up the appointment of medical director to the Cassel Hospital for Functional Nervous Disorders, announced in THE LANCET of Dec. 1st, but to continue in his position at Caldecote Hall, Nuneaton.

NOTES, COMMENTS, AND ABSTRACTS

MEDICAL ART SOCIETY

CONSIDERABLE interest was awakened by a small exhibition of the pictorial art of members of the medical profession, held in the Russell-Cotes Art Gallery at Bournemouth, to coincide with the annual meeting of the British Medical Association. The success of this venture owed much to the willing collaboration of Mr. Norman L. Silvester, the curator of the gallery. Owing to lack of space it was, however, limited to those who were specially invited. All the exhibitors have now agreed that it is desirable to have an exhibition of this kind every year, and to widen its scope to include not only oils, water-colours and pastels (as at Bournemouth), but all forms of art—sculpture, miniatures, and works in black and white. Sir Leonard Hill has consented to be the first president of the Society, and Prof. C. A. Pannett to be hon. secretary. Sir Harold Gillies, who is a keen supporter, has offered to find suitable accommodation in London for the exhibition this year. It is proposed to open it in May to coincide with the opening of the summer exhibition of the Royal Academy. A selection of exhibits might then be sent to Australia for the Melbourne meeting of the B.M.A., and after their return it might be possible to show them at other places in this country. It is believed that a subscription of a guinea will cover secretarial expenses. Those who are interested in the exhibition are asked to communicate at once with Prof. Pannett at 131, Queen's-road, Richmond, Surrey, stating if they are in agreement with the proposals outlined above, and giving brief details of the medium they use in their artistic recreation.

POISONING IN BENGAL

THE province of Bengal has a population whose total numbers and density per square mile are roughly those of Great Britain. This fact is a useful datum when interpreting the significance of statistics relating to the province. The annual report [1] of the Bengal chemical examiner's department for the year 1933 discloses some interesting figures. Poison was detected in 209 human viscera and in 56 viscera of cattle. In the human cases opium was by far the commonest poison, being detected in 46 per cent. of the total, while arsenic ranked next accounting for 12 per cent. Of the animal cases, all but two were due to arsenic. Arsenic is notoriously the commonest poison used for cattle killing throughout the East. Among Muslims suicide is uncommon and the majority of the suicidal cases singled out for comment in the report are Hindus, although the relative numbers of Mohammedans and Hindus in the province are roughly equal. For suicidal purposes opium, arsenic, and the corrosives appear to be favourite poisons. The barbiturates have not yet come into fashion for self-destruction among the natives. Only two such cases were reported and one was a European male. Opium and its alkaloids are of great importance from a medico-legal standpoint, Bengal being responsible for the largest single fraction of deaths from poisoning; the same is shown in the reports from others of the larger provinces.[2] In the Punjab the highest ratio of fatal opium cases to population was found to be among the native Christians while the lowest was among the Muslims. Suicidal opium cases, both fatal and non-fatal, occur among males three times more frequently than among females. This is a very interesting fact as India is the only country in the world where suicides among females exceed those among males. Women in India resort to drowning and hanging in preference to poisoning. The popular age for both sexes to commit suicide by taking opium ranges between 15 and 25 years. Homicidal opium poisoning appears to be rare. Accidental opium poisoning among addicts and non-addicts is not so uncommon. In the Bengal figures relating to poisons found in human viscera oleander was found in frequency next to arsenic. The yellow oleander tree is commonly met with in the plains all over India and is widely grown in gardens for its beautiful flowers. The seeds of the oleander have long enjoyed a reputation for being highly poisonous and have been commonly employed for suicidal and homicidal purposes. In Bengal both the whole fruit and the seeds are believed to be abortifacients. In the Bombay presidency the plant has a vogue as a cattle poison. It has a digitalis-like action and has recently been carefully studied by R. N. Chopra and B. Mukerjee.[3] Unfortunately the margin between the therapeutic and toxic limit seems to be too low to warrant its safe administration. Poisoning from quack medicines must occur throughout India far more commonly than ever comes to light. The Bengal report describes a fatal case of acute mercury poisoning in a young man who was being treated for venereal disease by a quack doctor in Dacca.

[1] Report by B. M. Chakravarti, L.M.S., F.C.S., Professor of Chemistry in the Calcutta Medical College. Alipore: Bengal Government Press. 1934. Pp. 22. 10*d*.

[2] Indian Med. Gaz., 1933, lxviii., 602, and 1934, lxix., 596.

THE LAW CONCERNING ILLEGITIMACY

THE national council which watches over the interests of unmarried mothers and illegitimate children has issued a fourth edition of a useful pamphlet.[4] The principal alterations in existing law are those introduced by the passing of the Children and Young Persons Act, 1933. Under this Act foster-children taken for reward are more carefully safeguarded than hitherto, by stricter regulations as to the giving of notice in connexion with reception or removal of such children, and by making it illegal to publish anonymous advertisements offering to undertake their nursing and maintenance. Under the same Act a juvenile court has power to supervise or to make arrangements for the supervision of children or young persons under the age of 17 years who are proved to be in need of care and protection for specified reasons. The local authority may be appointed as "fit person" to act as guardian of such children or young persons, and may also adopt a child under certain conditions. Other legal points explained refer to registration, inheritance, custody, guardianship and maintenance, affiliation proceedings and orders, private agreements between parents, legitimation, adoption, criminal assault, seduction and criminal abortion. The pamphlet has been compiled for the guidance of social workers, and, while necessarily general in terms, it provides a concise and accurate summary based on Acts of Parliament and judgments given in the courts.

[3] Indian Jour. Med. Research, 1933, xx., 903.

[4] A Few Points of the Law of England and Wales, relating to Unmarried Mothers and Illegitimate Children. National Council for the Unmarried Mother and her Child, 117, Piccadilly, London, W. 3*d*.

ATYPICAL CANCER OF THE STOMACH

AN attempt has been made by J. R. Goyena and H. J. d'Amato (Semana Méd., 1934, xli., 745) to assess the relative frequency of atypical forms of gastric carcinoma. From a study of a small series of 28 cases they conclude that such atypical forms are commoner than is generally supposed; for their 28 included 10 with an unusual clinical picture. Two assumed an acute febrile form; 4 were "juvenile"; in 2 achlorhydria was absent; in 1 there was no anorexia; and in 1 the initial symptoms were psychopathic. Referring to the acute febrile form, Goyena and d'Amato state that high temperatures are rare; one more often finds, as in both their cases, remittent fever of moderate height—presumably due to infection, but whether this is primary or secondary to the growth is in their opinion uncertain. Of the 4 "juvenile" cases—i.e., those in patients under 40—2 were men and 2 women; the disease appeared earlier and ran a more rapid course in the latter. The 2 cases without achlorhydria had nothing to suggest the presence of peptic ulcer preceding the cancer. It is emphasised that though achlorhydria is an important sign of carcinoma its absence must not be taken as excluding a growth. The form without anorexia is not confined, as has been stated, to juvenile cases, but may be encountered at any age. Appetite may remain throughout the illness, or may return—and even become excessive—through psychological causes or mechanical relief, such as the overcoming of obstruction. The development of mental symptoms at an early stage may be attributed to absorption of toxins from the growth or perhaps to anæmia.

RESTORATION OF THE MANDIBLE

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DISCLAIMERS

Mr. B. W. RYCROFT wishes to publish a disclaimer of any responsibility for the publicity which has been given to a case on which he operated recently at the Royal Eye Hospital, St. George's-circus, London, S.E. A similar protest has been received from Mr. G. Handelsman, the senior house surgeon at the hospital, whose name was communicated to the press without his knowledge or consent.

From Prof. J. W. McLEOD and Dr. J. S. ANDERSON we have received a protest against the numerous accounts which have recently appeared in the public press with regard to work on diphtheria done by them and their colleagues at Leeds. "The accounts," they say, "have been contributed without our consent or knowledge and we disclaim any responsibility for them. A number of the statements made are palpably absurd, and the value of the work has been grossly exaggerated."

Vacancies

For further information refer to the advertisement columns

Aberdeen Royal Infirmary.—Radiologist. £1200.
Aberdeen City Fever Hospital.—Jun. Res. M.O. £100.
Bath, Royal Mineral Water Hospital.—Asst. Pathologist.
Bath, Royal United Hospital.—Hon. Radiologist.
Beckenham, Bethlem Hospital, Monks Orchard.—Res. H.P. At rate of £150.
Birmingham, Children's Hospital.—Asst. Res. M.O., &c. £125.
Birmingham City.—Asst. M.O. for Maternity and Child Welfare. £500.
Birmingham Ear and Throat Hospital.—Third Res. H.S. At rate of £150.
Bolingbroke Hospital, Wandsworth Common, S.W.—Hon. Physician for Diseases of Children.
Bradford Royal Eye and Ear Hospital.—Jun. H.S. £150.
British Empire Cancer Campaign.—Research Biochemist. £500.
British Post-Graduate Medical School, Hammersmith, W.—Three First Assts. for Dept. of Medicine. £250–£500. Also Two First Assts. for Dept. of Surgery. £250–£500.
Bucks County Council.—Asst. County M.O. and M.O.H. £800.
Cambridge, Addenbrooke's Hospital.—Res. Anæsthetist and Emergency O. Also H.S. Each at rate of £130.
Capetown, Cape Hospital Board.—Med. Asst. to Radiological Dept. £600.
Cardiff Royal Infirmary.—Hon. Asst. Physician.
Chester Royal Infirmary.—H.P. and H.S. Each £150.
Chichester, Royal West Sussex Hospital.—Sen. and Jun. H.S.'s. £175 and £125 respectively.
Colchester, Royal Eastern Counties' Institution, &c.—Asst. M.O. £350.
Coventry and Warwickshire Hospital.—H.S. to Spec. Depts. At rate of £125.
Croydon, County Borough.—Asst. M.O.H. and Asst. School M.O. £500.
Eastbourne, Princess Alice Memorial Hospital.—Res. H.S. £150.
Elizabeth Garrett Anderson Hospital, Euston-road, N.W.—Asst. Radiologist. £100.
Evelina Hospital for Sick Children, Southwark, S.E.—H.P. At rate of £120. Also Fourth Physician. 50 gns.
General Post Office.—Asst. M.O. £510.
Grimsby and District Hospital.—Sen. and Jun. H.S.'s. £200 and £150 respectively.
Grocers' Company.—Three Medical Research Scholarships. Each £300.
Hampstead General and North-West London Hospital, Haverstock-hill, N.W.—H.P. At rate of £100.
Hospital of St. John and St. Elizabeth, 60, Grove End-road, N.W.—Res. H.P. At rate of £100.
Huddersfield County Borough.—Asst. M.O.H. £500.
Ilford, King George Hospital.—Hon. Dermatologist. Also Cas. O. and H.S. At rate of £150 and £100 respectively.
India.—Six Gazetted Appts. for Med. Res. Detp. Each Rs.625–Rs.1350 calendar month.
Ipswich, East Suffolk and Ipswich Hospital.—H.S. £120.
Isle of Ely County.—Asst. County M.O.H. and Asst. School M.O. £500.
Liverpool, David Lewis Northern Hospital.—Cas. O. At rate of £120. Also four H.S.'s and two H.P.'s. Each at rate of £80.
Liverpool Royal Children's Hospital.—Two Res. H.P.'s and two Res. H.S.'s for City Branch. Each at rate of £100. Also Res. M.O. and Res, Surg. O. for Heswall Branch. Each a rate of £120.
Liverpool Royal Infirmary.—Two H.S.'s to Spec. Depts. Each at rate of £60.
Liverpool University.—Res. Obstet. Asst. and Tutor. At rate of £250.
London County Council, St. Margarets Hospital, Kentish Town.—Part-time Consultant for Treatment of Vulvo-Vaginitis. £125.
London County Council.—Physicist. £750.
Maidstone, West Kent General Hospital.—Two H.S.'s. Each £150.
Manchester, Booth Hall Hospital.—Res. Jun. Asst. M.O. At rate of £200.
Metropolitan Hospital Kingsland-road, E.—Res. Cas. O. £100.
Newcastle General Hospital.—Med. Reg. At rate of £250. Two H.S.'s and H.P. Each at rate of £150.
Newcastle-upon-Tyne Hospital for Sick Children.—H.P. and H.S. Each at rate of £100.
Norwich, Norfolk and Norwich Hospital.—H.P. £120.
Oldham, Boundary Park Municipal Hospital.—Res. Asst. M.O. At rate of £200.
Preston and County of Lancaster Royal Infirmary.—H.P. £150.
Queen's Hospital for Children, Hackney-road, E.—Asst. Phys.
Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Obstet. Surgeon to Out-patients.
Rainhill, Lancs, County Mental Hospital.—Asst. M.O. £500.
Royal Dental Hospital, Leicester-square, W.C.—Hon. Anæsthetist. Also Hon. Asst. Anæsthetist.
Royal National Orthopædic Hospital, Great Portland-street, W.—Hon. Radiol. Also H.S. for Country Branch. At rate of £150.
Salisbury General Infirmary.—H.P. At rate of £125.
Southend-on-Sea General Hospital.—Res. Obstet. and Gynæcological Officer. At rate of £125.
South London Hospital for Women, Clapham Common, S.W.—Out-patient M.O. At rate of £100. Also Asst. Surgeon.
Stoke-on-Trent, North Staffordshire Royal Infirmary, Hartshill.—Asst. Hon. Ophth. Surgeon. Also H.S. At rate of £150.
Taunton, Sandhil Park, Bishop's Lydeard.—Med. Supt. £850.
Victoria Hospital for Children, Tite-street, Chelsea, S.W.—H.P. and H.S. Each at rate of £100.
Warrington County Borough.—Asst. M.O.H., &c. £450.
York, Friends' Retreat.—Jun. M.O. £300.

The Chief Inspector of Factories announces vacant appointments for Certifying Factory Surgeons at Strichen, Aberdeenshire; Lichfield, Staffordshire; and Falmouth, Cornwall.

Births, Marriages, and Deaths

BIRTHS

DAVIDSON.—On Jan. 3rd, at Louise Margaret Hospital, Aldershot, the wife of Major T. W. Davidson, R.A.M.C., Glenmoor, Fleet, of a son.

MACKENZIE.—On Jan. 2nd, at Oxford, the wife of D. St. Clair Mackenzie, M.B. Dub., of Wantage, of a daughter.

MITCHELL-INNES.—On Dec. 30th, at Ashby-de-la-Zouch, the wife of W. Mitchell-Innes, M.B. Edin., of a daughter.

MONTGOMERY.—On Dec. 30th at Belfast, the wife of F. P. Montgomery, M.B. Belf., of a son.

WALKER.—On Jan. 4th, at Woking, the wife of Major R. F. Walker, M.C., R.A.M.C., of a son.

WATSON.—On Dec. 29th, at Watford, the wife of L. K. Watson, M.R.C.S. Eng., of a son.

MARRIAGES

HILLMAN—CUFF.—On Jan. 5th, Oscar Stanley Hillman, M.S. Lond., F.R.C.S. Eng., to Joan, younger daughter of Mr. and Mrs. Gordon Cuff, of Newlands, Liss.

SINGER—DAVIS.—On Jan. 2nd, at Holy Trinity Church, Brompton, S.W., Major E. O. A. Singer, R.A.M.C., to Margaret, only daughter of Colonel A. C. Davis, R.E. (T.), J.P. (High Sheriff of Kent), and Mrs. Davis, of Stone Castle, Greenhithe, Kent.

SUTCLIFFE—TILLEY.—On Jan. 3rd, at North Curry Parish Church, Somerset, A. L. Sutcliffe, M.D. Camb., of Malvern, to Mrs. W. N. Tilley.

DEATHS

COLMAN.—On Dec. 31st, at Farnham, Surrey, Walter Stacy Colman, M.D., F.R.C.P. Lond.

CRAIG.—On Jan. 6th, at Salona, East Preston, near Littlehampton, Sir Maurice Craig, C.B.E., M.D. Camb., F.R.C.P. Lond.

JONES.—On Jan. 6th, suddenly, at 17, St. Ronans-road, Southsea, Arthur Bassett Jones, M.B. Lond. (late of Llandrindod Wells), aged 66 years.

LOVE.—On Jan. 4th, at Salisbury-road, Hove, John Love, M.D. Glasg., late of Glasgow.

PAGDEN.—On Jan 1st, at Queen's-gate, Plymouth, Trayton Charles Pagden, M.B. Lond., formerly of Horley, Surrey aged 73.

WREFORD.—On Jan. 1st, at Southernhay West, Exeter, Dr. Heyman Wreford, formerly of The Firs, Denmark-road, Exeter.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.